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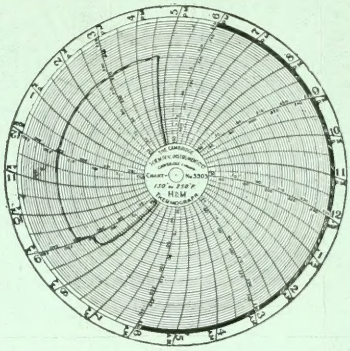

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Labour in Shipyards.

THERE are some variations in the estimates of the numbers of additional skilled and unskilled men who can be profitably employed in the shipyards. Dr. Macnamara, the Secretary to the Admiralty, speaking evidently after consultation with the Ministry of National Service, puts the number at 17,000, but he adds that the demands will progressively increase. Mr. George Lambert, who was for a long time Civil Lord of the Admiralty, and still takes a very close interest in these matters, states that his information from the very highest authority is that the private shipyards can absorb 75,000 men in the next few months. The situation is such that too great emphasis cannot be placed on giving every available man to the task of producing ships. Mr. Asquith did right to seek a further assurance from the Government on the subject during the second reading debate on the Military Service Bill. Not only did he desire that the Government would keep up the number of men employed in the shipyards, but that they should be prepared to supply the increased demand for labour. The Prime Minister gave the assurance, which, he said, the Government regarded as the primary necessity of the hour. But there has been delay. The fact that Dr. Macnamara can say that it is being arranged that a considerable number of skilled men shall be released from the colours for work in the private shipyards and engine works does show that on this point procrastination has been operating. In the first place these skilled men ought never to have been with the colours at all, and in the second place, seeing that they were there, they ought to have been released long ago when the shortage of labour was revealing itself.

Non-Ferrous Metals.

By making concessions in detail the President of the Board of Trade has facilitated the passage of the Non-Ferrous Metal Industries Bill through Committee in the House of Commons. In the main, members were ready to accept the Bill as a measure which, in the period of recuperation after the war, will exclude from this country the penetrating influences of the Metallgesellschaft of Frankfort. Some members opposed it because they did not like the system of licences, and pointed out that in the case of certain metals like copper, we could not exercise a complete control because we did not control the sources. At any rate our experience in regard to the supply of some of these non-ferrous metals in the months after the war broke out are sufficient to give us pause. We needed them for munitions, and found that a powerful German combination had been controlling them. The vital interests of national defence were here at stake. Moreover, any international monopoly in any metal places a trade using it at a disadvantage. We need not suppose that the German desire for peaceful penetration will not survive the war. It will doubtless be as restless, if not as powerful, as ever again, and in the period of the reconstruction of industry we must be on our guard.

The Joint Insurance Association.

The pronouncement made upon the functions of the Combined Insurance Association, by Mr. E. F. Nicholls, Chairman of the Institute of London Underwriters, at the Annual General Meeting of that body, is of particular interest, as it affords the first official intimation of the scope of the Association's operations. Mr. Nicholls referred to the probable development of taxation in Great Britain, the Colonies, and foreign countries, and to the question of deposits, both of which it is anticipated will affect the insurance world generally. To deal with these and like subjects the Association has been formed, so that all branches of insurance could be represented by one body, and there is no doubt that the Combined Insurance Association can voice the opinions of its constituents with a force and prestige unattainable by the individual departments of the insurance business. To obtain the greatest good from such an institution, however, it is necessary that the full weight of the insurance market should be behind it, and Mr. Nicholls' announcement that only 14 marine companies had so far applied for membership needed the qualification that he would like to see that number doubled before the first meeting of the Association, which will be held shortly. There is no doubt that the sympathies of the marine market are entirely with the Association, and the fact that a number of companies have not yet sent in their applications for membership is certainly not due to any hostility to the scheme.

Limitations of the Insurance Market.

When first we wrote of the dangers awaiting the insurance market through the abnormal expansion which has become apparent during the past two years, we had no idea that the limits which then ruled would be stretched even further. From time to time, however, it has been brought to our notice that the market was apparently still able to absorb all the business offering without becoming overfull to any great extent. This is undeniable evidence that at present the market is keeping pace with the rise in values, both of ships and commodities, which is an unavoidable consequence of the present situation. In itself, this expansion is desirable, and as long as the present values rule, so long will the market prosper on the large volume of business offered to it. It is inevitable, however, that at some time the limit

of increase will be reached, and it is then that the danger of a market too large for the amount of business offering, will become apparent. In the past we have seen the result of such an occurrence, and there is no reason to suppose that the result of a lessening of the volume of business will operate differently in the future. As premiums become more difficult to obtain, so will the weaker units of the market be compelled to accept cut rates in order to maintain their income from this source. This, and the acceptance of too great a liability on undesirable risks, is necessarily accompanied by ultimate financial insecurity. Disaster follows, and a process of readjustment is developed until stability is recovered by the elimination of the weakest. It is difficult to conceive any rational method of averting this undesirable sequence of events, which undoubtedly will be the outcome of any appreciable decrease in values in the future.

Abandonment of new War Risk Scheme.

The announcement that the new Government scheme, by which a practical monopoly of war risk insurance was to have been established, had been abandoned, did not come as a surprise to the insurance market. Although the scheme was so far developed that an office near Lloyd's had been chosen, it was known that a strong feeling existed in certain quarters against a step which was regarded as somewhat drastic. War risk insurance, therefore, will continue to receive the benefit of the Government scheme at fixed rates with the alternative of the rates current in the open market when they compare favourably with the Government price. It is perhaps better for insurers that this form of competition should exist, and it has already been pointed out by the opponents of the monopoly scheme that the greater part of the war risk underwriting profits reach the National Exchequer through taxation, and that the Government loses little by abandoning its extended programme.

Another P. & O. Purchase.

The shareholders of the Mercantile Steamship Company of London, which owns a fleet of cargo steamers, have been invited by the directors to accept an offer which has been made by Lord Inchcape, on behalf of the Peninsular and Oriental and British India Steamship Companies, for the purchase of the share capital. The price offered for the £5 ordinary shares is £32, or more than six times the amount paid up, while the 5 per cent. £1 preference shares would be bought at par. The capital consists of 40,000 ordinary shares and 128,000 preference shares, so that the offer, if accepted by all the proprietors, would involve the payment of £1,408,000. The offer is, of course, subject to its acceptance by the requisite majority of shareholders. It will be remembered that the P. and O. recently acquired the Hain fleet of steamers, consisting of 18 vessels, having an aggregate deadweight capacity of over 125,000 tons, at a total purchase price of about £4,000,000, the full particulars of the deal having appeared in our issue of November 1, 1917 (page 424), and the two transactions form part of a definite policy which is being adopted with a view to replacing tonnage lost as a result of the war by the purchase of fleets of second-hand cargo vessels, thus providing as far as possible for the maintenance of the regular services after the cessation of hostilities.

Solving the Liner Problem.

With the continuation of the war, whilst it may find us gradually able to build tonnage at the same rate, and eventually at a greater rate than the enemy is able to sink it, it must not be lost sight of that amongst the ships sunk there may occasionally be a liner, but the ships turned out from the shipyards are almost invariably of the cargo carrying type. Thus the shortage of liner tonnage becomes more and more pronounced as time proceeds, and the after-war position of the passenger steamship companies tends to become more and more perilous. Small wonder, therefore, that the liner companies should be seeking by many different ways to replace the ships lost with others that will be suitable for employment in their regular services. Amongst these ways we have already drawn attention to the completion of liners, which were under construction when the war broke out, as cargo carriers, the fitting out being performed in such a way that they can with ease be converted into passenger ships after the conclusion of hostilities. We may also chronicle an increasing demand on the part of the liner companies for vessels of the cargo-liner or "intermediate" type, which could be employed in their regular services. Several liner companies have quite recently acquired single ships of this type at high prices, and it is believed that negotiations have been proceeding for the transfer of more than one cargo fleet. Notwithstanding these expedients, we are of the opinion that a determined effort should be made on the part of the liner companies to compel the Government to consider seriously the probable position of the liner fleets after the war, and to take steps towards its amelioration.

Trade and Shipping of Central Powers.

The principal opinions advanced by Dr. J. Auspitzer (director of the Austrian Lloyd) in a recent review of the common trade and shipping interests of Germany and Austria-Hungary, are that re-entry into world trade is a first essential for the Central Empires; and that raw materials, exchange and tonnage are the three great problems of the transition period after the war. The Central Powers are truly "prisoners limited to trading with each other, and to an ever-dwindling trade with neutrals. Self-sufficiency is a phantom; the first essential is to resume world trade." Auspitzer is amongst those who foresee an inevitable and severe shortage in raw materials and foodstuffs for some time after the war, however soon the latter may be ended. He believes, however, that the Central Empires will have sufficient tonnage to cover all their shipping requirements for some time after the war. The writer concludes that the tonnage problem is not crucial so far as Austria-Hungary is concerned. Another, even more optimistic conclusion is that normal exchange will be reached soon after the war, though it is admitted that it must be a long time before shipowners regain their pre-war position. In the meantime they ask to be allowed as free a hand as possible. A vigorous policy of production and trade must be established. This, it is urged, is the primary factor, and sea traffic the secondary factor. Auspitzer's ulterior motive is apparently to urge the establishment of a common trade and shipping policy by Germany and the Dual Monarchy.

Tonnage-Saving Plans.

Of late, several interesting proposals have been made with a view to economising the available tonnage to the best advantage, and more than one half of them has been adopted with beneficial results. Among other plans may be mentioned a greater compression of wool and cotton bales, the boning of meat, and the utilisation of unoccupied cabins and state rooms for the carriage of commodities. As regards the scheme suggested some time ago for the shipment of Australian wheat across the Pacific to the west coast of the United States, so as to replace a similar quantity of American grain forwarded from the eastern seaboard to Europe, no definite decision, as far as we know, has been arrived at, though the proposal is understood to have been favourably received. It may yet, in fact, be accepted as a part solution of the Australian problem. Another interesting proposal of the kind is that depôts for wheat and more perishable goods should be created on the north-west coast of Africa, or on some of the Atlantic islands, so that submarine merchantmen could convey cargoes as required through the danger zone. And it is also urged, we hear, that all supplies for our troops in Mesopotamia and

Palestine should be supplied from countries east of Suez, in order to eliminate the U-boat menace. After all, almost everything that is necessary could be obtained from Australasia, Africa, India, Japan and China. The adoption of such a scheme would also, it is contended, abolish or minimise the risk at present attending the shipment of goods from Great Britain or America through the Mediterranean.

Labour and Steel.

Although many factors must go towards the successful fulfilment of a large war-time programme of shipbuilding, it can be asserted that the two most essential factors are an adequate supply of labour and steel. The Americans are desirous of building a very large amount of merchant tonnage, but the figures cabled over from the other side, and which we have quoted from time to time, show how circumstances are compelling them to modify their original ambitious estimates. To a very large extent these modifications have been forced upon them by the inadequacy of the supplies of labour and of steel, and it is therefore interesting to record, as evidence of the spirit of determination which is actuating our Allies, two steps which have recently been taken to deal with these phases of the problem. It is announced that following on a visit by President Wilson to the office of the U.S. Shipping Board, plans have been formulated for the creation of a volunteer reserve of 250,000 shipyard workers, to be called on in case of need to assist in the Government shipbuilding programme, the organisation of the force to be begun immediately. On the other hand the chairman of the U.S. Steel Corporation has informed Mr. Hurley, the chairman of the Shipping Board, that he would assume the responsibility for supplying enough steel plates to meet the requirements of Government shipbuilding, however much the programme might be enlarged.

Origin of the 12½ per Cent.

In the midst of a new controversy over the 12½ per cent., it will do no harm, we hope, to direct attention to the origin of the bonus. The position which called for adjustment in this particular way was the direct outcome of a characteristically short-sighted Trade Union act. When the first Munitions Bill was going through Parliament the representatives of organised labour insisted upon payment of the full district time and piece rates to proficient semi-skilled workers doing skilled men's work. Having no views on the subject of restriction of output the semi-skilled piece workers were soon in receipt of very high weekly earnings—earnings which were ridiculously large as compared with the time earnings of the skilled workers associated with them. These skilled workers—whose services are, by the way, practically indispensable to the semi-skilled workers—eventually claimed an addition of 15 per cent. in order to equalise their earnings with those of the piece workers. They were given 12½ per cent., and were grateful for the concession. Then came the great blunder of extending the concession to a group or groups of skilled workers, whose association with the high-earning semi-skilled munitions piece workers was remote, for in that way a precedent of a sort appeared to be set up for regarding the 12½ per cent. as the right of all time workers, instead of as the right of only those belonging to a particular class. From first to last there has been nothing very creditable in the business to Trade Unionism, and sooner or later level-headed adherents to the movement will realise that.

Labour and Wealth.

Few prominent employers see the industrial prospect from higher ground than that which the Chairman of Cammell, Laird & Co. takes up in his public speeches, and fewer still show as much scientific care as he does in analyses of it. Mr. Hichens has, of course, no illusions as to the differences there at present are between the views of Labour and the views of Capital. Of a great many people who have studied his James Watt Anniversary Lecture it would be dangerous, however, to assume as much. The whole of the scheme which Mr. Hichens described at Greenock on Friday night obviously hangs together. Yet already his statement to the effect that the State ought in post-war days to take a large part of industry's excess profits has been detached from the context and, in a sense, divorced from its meaning. Under the conditions proposed by Mr. Hichens, and with a fairer basis than the pre-war standard of profits, few employers would probably object to the State taking excess profits. It seems to us, however, that until the workers are clearer in their minds as to what it is they really want, employers do harm rather than good in publicly discussing the matter. For instance, Labour leaders have, at the moment, a good deal to say about "conscription of wealth." It has remained, however, for Mr. Adamson, the leader of the Parliamentary Labour Party, to make the idea look a little ridiculous, for it is his opinion that besides conscripting Capital, the State should take all excess profits over the pre-war standard. Obviously, they cannot have it both ways. We cordially commend Mr. Hichens' full proposals to the consideration of thoughtful Trade Unionists.

Fabricated Ships.

According to accounts coming from both sides of the Scottish Border, the United Kingdom's shipbuilding industry is slowly, but surely, tending towards what Americans call "the fabrication of ships." Its present reliance—or rather the reliance of its temporary controllers—on the bridge yards is, of course, a war period expedient. But outside of official circles the talk is, significantly enough, of combinations for the purposes of post-war business of steelmakers and shipbuilders. It does not follow that the effect of such combinations would be a development on logical lines of the fabrication of cargo ships. But we need not shut our eyes to the fact that a closer association of steelmaking and shipbuilding is the thin end of a wedge of exactly that sort. It will be discovered that it pays to do a little in the way of preparation of the material at, or near to, the steelworks; then the little that may be done profitably will grow until the units are as large as may be transported to the shipyards by rail or road. Another important fact which ought not to be ignored is that, although many people are unaware of it, a great body of experience of standardised shipbuilding is being built up in the United Kingdom. With it to go by, the industry itself is probably unconsciously inclining to meet the steel trade's new tendency; so that it is not, after all, to risk very much to forecast a fairly heavy British resort to the fabrication of ships in the post-war period.

Reciprocating Circulating Pumps.

In a recent note on reciprocating circulating pumps we expressed the opinion that as a result of the disturbed delivery from a reciprocating pump as compared with the steadier flow from the centrifugal type of pump, the former should prove better adapted as a circulating pump than the latter, since it led to a better contact between the circulating water and the condenser tube, and therefore to a better transference of heat. We have been taken to task by a correspondent, who pointed out that the velocity of flow through the tubes of a surface condenser is always greater than the limiting speed for stream line motion, and that therefore our objection to the centrifugal pump was invalid. It should be pointed out, however, that even at velocities considerably higher than the critical velocity, the motion of the water through the tube is such that the water at the centre of the tube may not come in contact with the tube surface at all, the motion on the surface of the tube being in the nature of a small eddying motion, the particles of water eddying along the surface of the tube for its entire length, and it is only with the existence of considerable disturbance of the water flowing through the tube that this clinging to the surface is

prevented. In this connection it might be mentioned that it was Professor Perry, of the Royal College of Science, who advocated as a condition of high efficiency an excessive amount of circulation in a boiler so that the water should "scrub the surface of the tubes"; and we would also draw attention to the article appearing in this issue on "Boiler Circulation," in which a quotation is made from Professor Dalby's famous paper on "Heat Transmission," wherein he postulates the existence of a water film in contact with the metal plate. Obviously the more agitated the motion of the water through the tube, the smaller is the effect of this water film, and therefore the greater the heat transference. Finally, the "two inherent advantages" of the centrifugal pump noted by our correspondent do not apply, since we were advocating reciprocating circulating pumps when these were not driven from the main engines.

REORGANISATION OF THE BOARD OF TRADE.

SHIPPING is keenly interested in the organisation of the Board of Trade. In the first place a great deal of routine administrative work is discharged by the Marine Department, but shipping as one of the great industries of the country cannot remain indifferent to the broad handling of commercial and industrial problems by the Board. In the past its rather haphazard constitution has been against it, and admittedly it needs an overhaul. Sir Albert Stanley, the President, has just launched an ambitious scheme for its reorganisation, under which its functions will be grouped under convenient arrangements. It is proposed to put the scheme into immediate operation, at least in its main outlines, so as to place the department in a position to meet new responsibilities on the conclusion of peace.

In this rearrangement of the Board of Trade its functions are broadly divided into two groups—advisory and executive. To one division, the Department of Commerce and Industry, various advisory matters extending to important questions of policy will be entrusted. It will be mainly concerned "with the development of trade, with vigilance, with suggestion, with information, and with the duty of thinking out and assisting national commercial and industrial policy." In other words, it is designed to supply the place of the Ministry of Commerce. The other division, the Department of Public Service Administration, will be charged primarily "with the exercise of statutory and other administrative functions of a permanent nature in regard to trade and transport." This broad differentiation of duties at first sight seems natural and well conceived. It involves no disrespect to the Board of Trade to say that the time is ripe for an internal redistribution and rearrangement of its duties. Its functions during the last sixty years have expanded enormously, and it has never been formally adapted to them. In theory the Board remains merely "a Committee of the Privy Council appointed for the consideration of matters relating to trade and plantations." Commerce, industry, shipping, railways have been developing, and as each legislative step became necessary in regard to them, a new duty was cast on the Board of Trade. Is there any wonder that it presents an unsystematised, overgrown appearance? It is the laudable ambition of the President to introduce some logical system of organisation into it, so that when we emerge from the war his department may be able to give assistance in the reconstruction of our industrial and commercial position.

The outstanding feature of the whole scheme is the new Department of Commerce and Industry. It is experimental, and it has to win its way to the general confidence of the commercial and shipping community. Its future depends on its capacity to adapt itself to the real needs of commerce. What, in fact, is wanted is enlightened sympathy and assistance and not bureaucratic patronage. The new department is throwing out its ambitious scheme of activities widely, and an enumeration of the names of the seven sections into which it is to be divided shows how ambitious it is. They are (1) Commercial Relations and Treaties; (2) Overseas Trade (Development and Intelligence) in conjunction with the Foreign Office; (3) Industries and Manufactures; (4) Industrial Property; (5) Industrial Power and Transport; (6) Statistics and (7) General Economic Department. The Industrial Power and Transport Section interests us particularly. It is to be charged "with the consideration of all questions of general policy relating to transport in its commercial aspect, including shipping, canal and railway rates, and facilities, through railway and ocean rates, shipping conferences, &c." It is also to deal with questions of power for industrial purposes. The prospectus is indeed widely drawn.

Alongside these proposals the Department of Public Service Administration appears in a modest unostentatious guise. It represents in the main a regrouping of the work which falls to be discharged by the Board of Trade under various statutes. The five new sections will be the Marine Department, the Railway Department, the Public Utilities and Harbours Department, the Companies Department, and the Bankruptcy Department. Everybody connected with shipping is familiar with the work of the Marine Department, and its administration of various matters arising out of the Merchant Shipping Acts. Broadly speaking, these departments will retain their routine functions. It appears, from the official memorandum, that "in addition to these statutory duties, it will be the function of this department to deal with each of the services concerned—Railways, Shipping, Harbours, Electric Undertakings, &c.—considered as undertakings, while, generally speaking, the department of Industrial Power and Transport will deal with the questions of policy arising out of the relations of these undertakings to industry and commerce."

In the result these changes will systematise the organisation of the Board of Trade. Yet dangers, as well as advantages, lurk in the new arrangements in regard to the Department of Commerce and Industry. Its success depends entirely on the spirit and discretion with which it is worked. If the new organisation confines its task to assisting the commercial community with trade information, with opportunities for consultation on trade matters, and with support in removing obstacles to the development of trade, then manifold benefits will accrue. If the tendency is to go further and load industry with bureaucratic fetters under some pretext of co-ordination, more harm than good will be done. The vice of bureaucracy is the compilation of paper schemes. We candidly do not altogether like the idea of a department charged, as one of its principal functions, with the consideration of the policy involved in such matters as through railway and ocean rates, shipping conferences, &c. Like Royal Commissions, it would be too much inclined to lend an ear to people who, under the colour of a grievance, want some advantage at the expense of other people. Once the assent of even a consultative department is obtained, an idea is pushed more vigorously than ever. During the war, shipping has had to surrender itself into the bureaucratic keeping of the Ministry of Shipping. When the war is finished the sooner that shipping is liberated from all bureaucratic control the better. We hope that no further departmental interference with shipping, under any guise, is contemplated.

MINERAL OIL FROM HOME SOURCES.

IN a recent article we drew attention to the various home sources of supply of mineral oil, and to the steps which were being taken to develop the production of oil from these sources to meet the ever-increasing demands of the Navy and the Mercantile Marine. A supply of oil which shall be suitable for fuel and freed from the uncertainties which overseas transport now involves would obviously prove to be a great national asset, both because of its own intrinsic value, and because it would tend to release tonnage for the transport of other essential commodities. Mr. Lloyd George, in his recent speech before Parliament, mentioned the fact that it had been found necessary "to convert a number of standard and other

ships from ordinary tramp steamers into oilers," the number being "about thirty-five," and this together with other matters of urgency in connection with the fuel oil supplies, has led to a considerable amount of correspondence in a certain section of the Press, in which the policy of the Ministry of Munitions in relation to the production of oil from home sources has been severely criticised. This has led to the publication of an official statement issued by the Ministry of Munitions, in which the policy of the Department is justified and an interesting light thrown on what has already been done. The statement is as follows :—

"Certain communications have recently been made to the Press upon the subject of the production of mineral oil from home sources. These communications are apparently based on incomplete information, and therefore may have created a mistaken impression. Apart from very serious technical difficulties which have to be overcome, the competing claims of other urgent war services for labour and materials render impossible the rapid development of methods which might otherwise be pursued with advantage. The Ministry of Munitions, however, has been steadily pursuing the policy which is considered to be best designed to produce substantial results in the shortest time. It is obviously undesirable to explain the actual methods or to state the quantities of oil which it is estimated will be produced, but it is thought that some indication may be given of the general policy which is being followed.

"All existing plant at the shale works of Scotland and the gas-works and coke ovens throughout the country are being pressed to their full capacity and are being extended so far as present circumstances permit. It has been found by experiments that certain plants already in existence can be adapted in a short time to treat new material by new methods. This adaptation of plants is being actively pursued, and has the obvious advantage of saving labour, time, and material, and making the best use of the existing staff and equipment. On the other hand, where suitable raw material cannot be dealt with on existing plants, arrangements are in progress for erecting works for the extraction of oil. Some of the correspondents suggest that a very large output of fuel oil can be obtained because one unit can produce or has produced a given quantity of oil. In the present state of supply of labour and materials any such easy multiplication is liable to be entirely fallacious."

Sir L. Worthington Evans, M.P. (Parliamentary Secretary to the Ministry of Munitions), in a statement on the subject, said that the Government had not been neglectful in the production of oil in this country. A good deal of shale oil has been produced in Scotland, but the attempts to produce it in various parts of England have not been so successful. Oil can be produced in larger quantities, however, from coal, especially cannel, by low temperature carbonization. Low temperature retorts have not, up to the present, been worked commercially, but development in this direction is hoped for. The difficulty of getting labour is now limiting the number of retorts that it is proposed to erect. Three collieries, however, have been selected where retorts will be put up on the Scottish system of dealing with shale, although they are not likely to be in operation for some months. Fortunately the Ministry of Munitions have found means for getting more immediate results by utilising the existing vertical retorts at gas works. There is an enormous advantage in dealing with coal at gas works because of the experience that has been gained there in retorting, labour-saving devices, and facilities for dealing with the raw material and the products.

Further progress has been made in another direction, by which oil can be produced in satisfactory quantities from materials which up to now have been regarded practically as waste; in fact, it is expected that munition factories will be using this home oil within the next few months. Experiments have been made in boring by private companies, but not by the Government, although plant is being prepared for that purpose, and with regard to the obtaining of petroleum from natural sources by boring in localities where such oil is believed to exist, it will be remembered that a Bill was recently introduced into Parliament to enable such sources to be economically and expeditiously worked. It was announced in the House of Commons on January 14 that the Bill was to be dropped because, as the Chancellor of the Exchequer said, it had been found that action could be taken without special legislation. Since then the King in Council has made an Order "with a view to developing as economically and expeditiously as possible any supply of petroleum which may exist in strata in the United Kingdom," and a new Defence of the Realm Regulation now declares that the Board of Trade or the Minister of Munitions may search and bore for petroleum, and may enter upon or take possession of any land, and sink wells and construct there.

It will thus be apparent that the Government are alive to the problem of the production of oil from home sources, alike when the oil is manufactured from shale or coal and when it is obtained direct by boring, and it is to be hoped that both methods will be so developed that large supplies of oil will be available not only to assist us in the abnormal circumstances caused by the war, but also as a cheap and constant source of fuel either for use with marine boilers or with Diesel engines and thus to assist in the maintenance and development of the mercantile marine after the war.

RESEARCH ON PROBLEMS OF PROPULSION.

WHILST it is admitted that some of the points, at present obscure, which affect the performances of ships might have a light shed upon them by experiments on a large scale, the difficulties associated with these experiments are so great that the practicability of the proposition may be questioned.

For example, in Mr. Wall's recent paper, the question of frictional resistance was touched upon, and it was shown that not only was the coefficient of friction uncertain for great lengths, but that the frictional resistance was greater in a ship-shape form than would be expected from considerations of length of ship and amount of surface. It was suggested that the towing of a large vessel at slow speed would enable the proper coefficients to be determined. Certain difficulties would arise in making these experiments. In the first place it seems to the writer that it is impossible to tow a model or vessel so slow that the total resistance recorded would be entirely frictional. If a model be moved ever so slowly in a tank it will be observed that a very decided wake follows after. Now whilst this may be largely caused by friction, a proportion of it, becoming greater the fuller the stem is made, is due to the run of the stream lines. The generating of this stream-line wake suggests that a certain amount of power has been absorbed thereby, which cannot be attributed to friction. In the second place, Baker has demonstrated that the laps and butts of shell-plating cause resistance, as also do the appendages. If the frictional coefficients are to be established the vessel upon which the experiments are being made must, to begin with, have flush plating and no appendages. Afterwards the effect of laps and butts would require investigation, and that on a sister ship. Even then the effect of laps and butts would require to be investigated independent of that of appendages, so that the latter would be fitted on afterwards if their effect was to be determined.

The question of appendage resistance is of great importance, but the field of investigation is so wide that the possibility of covering the same in full-sized experiments is next to impossible. It might be possible to establish whether the resistance of bilge keels was purely frictional or otherwise, and also whether appendage resistance —that of shaft brackets, bossings, &c.—as measured by model experiments, followed the law of comparison. Even this amount of information would be worth some trouble in procuring. Apart from these points, the questions of the resistance of shafts and bossings in twin, triple and quadruple ships, and how the angle of inclination and shape of bossings affect the hull efficiency value all call for investigation. It might be argued that if once a proper

comparison is established between model and full-sized experiment the guidance from tanks can be followed, but this is doubtful, for the actual performance of a twin-screw ship may agree with that foretold from tank experiment, but a triple or quadruple screw vessel gives an altogether unexpected result.

The greatest trouble in full-sized experiments will be in the determination of the efficiencies of the propellers, and of the hull efficiency values. When Professor Peabody made his experiments on the self-propelled model "Froude," he first of all sent the actual propeller to Taylor to have it tested in the Washington Tank. Now the experimenting with screws up to at least 2 ft. in diameter has been accomplished by Taylor, but how "open" experiments with screws up to 20 ft. in diameter are to be done, is difficult to see. The thrust potentialities and the efficiencies of propellers, when independent of the vessels they propel, must be ascertained if proper knowledge as to wake, thrust detention, and propeller efficiency is to be obtained. There is little use of contemplating full-sized ship experiments until it is possible to run full-sized propellers in open water unattached to the vessel to be propelled.

Mr. Hamilton Gibson's plan of measuring the actual thrust produced by a propeller does not go far enough in the way of enabling proper analysis to be obtained. The measurement of the wake must somehow be accomplished, and also the determination of the "rotative" efficiency. With a proper measurement of thrust and of the speed of the wake, the thrust horse-power could be found. Without the full-sized "open" experiments it is impossible to ascertain correctly the speed of the wake, or the thrust deduction.

Were it possible to determine the thrust horse-power some definite information regarding the mechanical efficiency of reciprocating machinery might be obtained. During the discussion which followed the reading of Mr. Wall's paper several instances were given of sister ships giving radically different results. It appears to the writer that this point must be cleared up by engineers so that the false impression may be removed that about 85 per cent. mechanical efficiency—or even 90 per cent.—can be obtained with regularity. When the forms, appendages, screws, and upperworks of sister ships are alike, the only explanation of the diverse results obtained is that the engines have been running differently.

Whilst there are difficulties in the way of making full-sized experiments, their desirability is undoubted and it is probable that the experimenting with large propellers in open water—*i.e.*, unattached to the ship—will yet be possible, and open up the way to make full-sized experiments profitable.

PUBLICATIONS RECEIVED.

[*A short notice of any publication does not necessarily preclude the subsequent appearance of a longer review.*]

The "Glasgow Herald" Shipbuilding, Engineering and Commerce in 1917. 60 pages. Published with the *Glasgow Herald*, Saturday, December 29, 1917. Price 1d.

This well-known and widely read review of the year makes a welcome re-appearance and its scope is in no wise diminished. It contains more than 30 articles dealing with the progress and outlook of almost every branch of the nation's commercial activity, many of which are of particular interest to shipowners and shipbuilders. Pride of place is given to a Review of "Trade in 1917," after which the shipbuilding activities of the Allied Countries, Neutrals, and Enemy Countries during the year, are brought under an exhaustive survey, and Lord Aberconway contributes an article on the Future of Shipbuilding, which will be read with interest and not a little gratification. Lord Leverhulme advances his theory for a reduction in the length of the working day in an article on "Production and Shorter Days," and another contribution which is of particular interest at the moment comes from the pen of Sir Walter Runciman, in which he exposes the "Weakness of State Control." Amongst the other articles that will be read with interest by shipbuilders is one on "Concrete Ships," by Bernard J. Ives, in which useful diagrams showing the disposition of the steel reinforcements are given, and such subjects as "The Supplies of Basic Iron," "British Empire Metals," "Scottish Mineral Oil," will suffice to indicate the nature of the remaining articles which form a list too lengthy to be quoted in detail. Altogether this annual review should prove of the utmost value to anyone who is in any way connected with the shipbuilding or shipping industry.

TRADE PUBLICATIONS.

[*Copies of any of the publications mentioned in this section will be sent on application to the firms by which they are issued.*]

"*Vilvalle*" *Heavy Duty Sawing Machines.* W. A. Walber & Co., Engineers, 38, Victoria Street, London, S.W. 1.—We have received an interesting illustrated pamphlet describing the "Vilvalle" heavy duty hack sawing machine. This machine, which is made in two sizes, one taking a 30-in. blade and the other a 17-in. blade, possesses many interesting features. It may be classed as a high-speed machine, the blade being designed to run at 110 strokes per minute, and as a result of actual tests carried out under ordinary working conditions, the machine was found to cut through a mild steel round bar 2 in. diam. in 3 minutes and an angle section 4 in. by 4 in. by $\frac{3}{8}$ in. in the same time. The guiding arrangement of the blade is such that the saw cuts a true surface at right angles to the axis of the bar, and at the end of the cut the belt is automatically struck from the fast to the loose pulley and the machine comes to rest. The table is so arranged that the saw may be swung back so that heavy work may be lowered on to the machine from the crane, and in order to provide the necessary lubrication of the blade a little centrifugal pump is fitted, giving a continuous supply of the cutting lubricant drawn from a large galvanised tank carried beneath the table of the machine, into which the lubricant drains. The principal dimensions and capacities of the two sizes of machine are given, and also the results of a number of actual tests of the time taken to cut mild steel sections of various shapes and sizes, from which we have quoted above.

THE FUTURE OF INDUSTRY.

JAMES WATT ANNIVERSARY LECTURE.

The Greenock Philosophical Society are fortunate in securing from year to year the services of outstanding men connected with engineering or shipbuilding to deliver the annual James Watt Anniversary Lecture of the Society. This year the lecturer was Mr. W. L. Hichens, Chairman of Cammell Laird & Co., who, on Friday last, addressed the Society on "Some Problems of Modern Industry." After tracing the history and development of State control over industry, including the control which the State has exercised as a direct result of the war, Mr. Hichens went on to deal with the future of industry when peace conditions are restored. Referring to the question of restriction of profits, he said he thought that no business was entitled to make unlimited profits. The present theory was that the residuum, however large it might be, after defraying the cost of production, should go to capital. That, he submitted, was unsound. Labour, the *entrepreneur* class, capital, and the consumer were all partners in the business of the community, and no one class was entitled to benefit unduly at the expense of another. The principle of the profits tax should, therefore, be retained after the war. The present tax, of course, was intended as a temporary measure, and a standard of profits based on pre-war earnings was quite unsuited to permanent conditions. It would be necessary to fix a standard rate of interest for the capital invested in each class of trade, and a proportion—he suggested a substantial one—of any excess profits over that standard should accrue to the State. In any such scheme it would be necessary to provide that adequate allowances be made for depreciation and for reserves to secure stability and development of business. The wholly inadequate provision for depreciation allowed under the income-tax regulations to-day had, he believed, done serious injury to the industries of this country. It had encouraged over-capitalisation, it had hampered the scrapping of old and the substitution of modern machinery; and it had given us a retrograde in place of a progressive

standard. Effect must somehow be given to the principle that no section of society was entitled to an unlimited share of the wealth of the community, that free competition had proved an impossible solution, and that profit-sharing with the State, which was what, in effect, an excess profit tax was, was more equitable and more expedient than other forms of profit sharing.

It followed, secondly, that just as capital was not entitled to an unlimited reward, but must be checked by State action, so also the reward of labour must, in the last resort, be determined by the State as representing the community. Labour had no more right than capital to make a corner in its own commodity and hold the community up to ransom, and it, too, must bow to the will of the State. In practice it was clear that the tendency would develop for wages to be settled by joint industrial boards, representing workers' and employers' organisations, but in the event of disagreement or collusion to exploit the community, the State must have the right of intervention. In the third place, the principle of national service required that the status of labour as a whole should be raised. The general acceptance of the proposals for joint industrial councils contained in the Whitley Report was good evidence that public opinion would support the demand of labour for an improved status. The more highly-organised employers' associations and trade unions had already advanced far along the lines of the Whitley Report, but much had yet to be done in determining precisely the powers and functions of these joint central and district bodies. There were two points in particular which, it seemed to him, deserved careful consideration. The first was the interpretation of decisions in regard to wages. At present all general increases in time rates were determined by the Government, and, incidentally, he might say, that it was a grave defect in organisation that so many Government Departments meddled in labour matters. There should be one Government Department only—the Labour Department—to deal with Labour questions, not half-a-dozen. There was, a serious lack of co-ordination between the Government Departments.

Referring to the question of the reduction of hours of labour, he said this was one of the most important problems awaiting solution. Under existing conditions large numbers of men and women were engaged on work of unalloyed drudgery, and the progress of specialisation and automatic machinery, which was inevitable, would increase rather than reduce the monotony of labour. The idea of leisured classes and toiling masses was monstrous. It was just the toiling drudge who needed leisure most—leisure for recreation and refreshment, and above all, leisure for education. The first step on the return of peace, therefore, should be the establishment of an eight-hours day as a first instalment towards still further reductions, if experience showed that this was possible, consistently with the material requirements of civilised existence. Moreover, he thought it should be arranged that each worker who had been with a firm a whole year, and had kept good time, should be given a holiday on full pay. The distinction between a strike and a holiday should be more marked than it was now, and the same absence of pay should not characterise both. These reforms would cost large sums of money; and there were others, such as housing and education, the cost of which would be formidable. Moreover, these reforms would be of little or no avail, unless a high standard of wages were established. Seeing that we were so largely dependent on our foreign trade, in which prices were regulated by international competition, it was quite clear that we should not be able to meet the bill unless we could effect drastic economies in production and largely increase our output. An important factor in improved production was the substitution of up-to-date machinery for old, and the extension of labour-saving devices. Most important of all for industry was the supply of cheap coal and cheap motive power. He also advocated the establishment of big selling combinations and a variety of manufacturing units. Otherwise it would be impossible for British industry to hold its own abroad against the big trusts of other nations.

FUEL OIL AND ITS APPLICATIONS.*

The use of "Liquid Fuel" or "Oil Fuel" on a large scale has only developed within the last decade, although it has been more or less used from as far back as 1861 when the residuals of the oil refineries in Russia were used in open furnaces. This, of course, was a wasteful method and subsequently various types of burners were invented, which by a process of evolution have become more or less standardised in three groups, of which more will be said later on.

PRODUCTION.

Fuel oil is frequently spoken of as "crude oil," but this is generally incorrect, as the crude oil, that is, the petroleum as it issues from the well, contains certain light fractions of the petrol and kerosene series, which it is not only desirable to extract from the crude by distillation on account of their higher value, but which, if left in the crude oil and used as fuel, would lower the flash point below the margin of safety which has been very properly fixed for fuel oil, *i.e.*, Lloyd's 150° Fahr., British Admiralty 175° Fahr. The crude is therefore subjected to what is known as a "topping process," which is a distillation which cuts out these lighter fractions, leaving a product having a calorific value of about 19,000 British thermal units.

MARINE BOILERS.

Of the various applications of fuel oil that of its use in warships would naturally be of premier interest at the moment, but for obvious reasons the point cannot be touched upon. There are, however, many attractive advantages in the application of oil to the mercantile marine. In one interesting comparison on coal and oil made by the American Hawaiian Steamship Company's s.s. *Arizonan* the vessel took 161 days on the round voyage when burning oil as compared with 186 days when burning coal, and by economies effected and increased earnings, due to saving of bunker space and decrease in operating staff, she saved $19,500·00 on the voyage, or over £4,010.

It is important to remember that the furnaces of a vessel burning oil may be readily altered to burn coal or vice versa when required. If suitable arrangements are made the work can be done at the cost of a few pounds by the ship's own staff without any trouble or delay to the steamer. The advantage offered by this ready conversion is that with vessels which trade between countries where either coal is dear and oil cheap, or the reverse, the cheaper fuel can be used on both journeys, resulting in remarkable economies. The Toyo Kisen Kaisha steamship line is operated in this way.

The very favourable indications of satisfactory service, which the trials of the Eagle Oil Transport Company's s.s. *San Fraterno* gave, were amply fulfilled on the maiden voyage. The *San Fraterno* arrived in London with her first full cargo of about 15,000 tons of oil from Mexico, having exceeded all the expectations of her owners. She made the round trip on an average speed exceeding eleven knots with three boilers employed, her consumption of Mexican fuel oil being only thirty-eight tons of oil per day, which for a ship of this size is highly satisfactory.

Taking the case of the Eagle Oil Transport Company's vessels *San Dunstano* and *San Eduardo*, both vessels of 9,000 tons d.w. carrying capacity, these are fitted to burn coal and oil respectively.

The consumption of fuel works out as two to three in favour of oil, while the i.h.p. developed shows an 18 per cent. improvement in the case of the oil-fired vessel.

The striking fact of the comparison is that the *San Eduardo* made the round voyage to Mexico and back eight days quicker than the other, making a large improvement to her earning capacity.

Efficiencies as high as 84·5 per cent. have been obtained in this country on Scotch marine type boilers using Mexican fuel oil with the pressure system of oil burning.

* Abstract of a Paper read by Mr. A. F. Baillie at a meeting of the Gloucester Engineering Society, at Gloucester, on January 15.

On a comparative test run at Wallsend slipway on coal and oil on a Scotch marine multitubular-type boiler, the following results were obtained :—

MEXICAN FUEL OIL.

Fuel oil—	
Specific gravity at 60° Fahr.	0·953
Viscosity at 100° Fahr. (Redwood No. 1)	2,130 secs.
Flash point (close)	160° Fahr. (above)
Calorific value	18,430
Water evaporated—	
Lbs. of water per lb. of oil	12·15
Lbs. of water per lb. of oil (from and at 212° Fahr.)	14·38
Boiler efficiency	75·37 per cent.

COAL.

Coal—	
Calorific value in British thermal units	14,432
Lbs. of water per lb. of coal	7·76
Water evaporated—	
Lbs. of water per lb. of coal (from and at 212° Fahr.)	9·31
Boiler efficiency	62·28 per cent.

OIL FURNACES.

Apart from the use of fuel oil for steam raising, there are a vast number of industries using direct heat in which oil is displacing coal, coke and gas firing. I refer to metallurgical and industrial processes such as brass melting, case hardening, annealing, tempering, rivet and bolt making, rivet heating, crucible furnace work, &c. The use of fuel oil for some of the above purposes was one of its earliest applications ; to-day oil furnaces have been brought to a very high point of efficiency and are being extensively and increasingly employed both in this country and abroad.

Briefly stated, the advantages realised in the use of oil for industrial furnaces are :—

(1) Increased output of plant ; (2) Reduction in the cost of fuel required for a given amount of work ; (3) Saving in time taken by the operation resulting in reduced labour cost and increased output of plant ; (4) More uniform results owing to perfect control of furnace temperature ; (5) Less waste owing to imperfect work, breakage, loss of metal, &c., according to the class of work for which the furnace is employed ; (6) Individual heats can be run and furnaces shut down without waste of fuel ; (7) No cleaning out of furnaces is necessary after a day's run ; there are no ashes to dispose of, and the whole manipulation of the furnaces is less irksome to the operator ; (8) Prolonged life of crucibles ; (9) Less floor space required and cleaner conditions in factories.

The calorific value of Mexican fuel oil is about 18,900 B.Th.U. per lb., as compared with coal, which usually varies between 11,500 and 14,500 B.Th.U. per lb. according to the nature and quality of the coal. There is, therefore, an increase of from 30 to 64 per cent. in the heating value of oil as compared with coal, weight for weight.

The thermal efficiency of an oil-fired boiler is much higher than that obtained with coal firing, as there is perfect smokeless combustion of the fuel. The efficiency of the great majority of coal-fired boilers in this country, under average working conditions, does not exceed 65 per cent., whereas experience with oil firing shows that 80 per cent., and sometimes more, of the theoretical heat value of the fuel is recovered.

The ratio of the heat units utilised per pound of oil fuel when compared with coal, taking into account the higher calorific value and better thermal efficiency, is as follows :—

	Coal.	Oil.
With coal of 14,500 British thermal units	1	1½
,, 11,500 ,, ,, ,,	1	2

The heating value of coal varies over a wide range, and is further often depreciated by the absorption of moisture. On the other hand, oil possesses a constant heating value which seldom varies from specification. In oil contracts a clause is often inserted basing price on actual calorific value, a form of contract which is rarely obtainable with coal supplies.

It will be seen from the above that the quantity of fuel required to do the same work is much less with oil than with coal, consequently there is great saving of space in storage of fuel. There is a further advantage that, while oil maintains its calorific value indifinitely coal steadily depreciates in thermal value in the course of time.

With fuel-oil furnaces the labour required for stoking, cleaning fires, and handling ashes is eliminated, effecting a great reduction in the cost of labour, which is one of the important factors to be noted in comparing the respective fuels. An oil-fired furnace rapidly attains its maximum heat from cold and is easily maintained at full capacity for prolonged periods. It can be instantly shut off when not required, and stand-by losses are accordingly avoided. The perfect combustion readily obtained with fuel oil means absence of smoke, soot and clinker. Oil can be pumped into storage with great rapidity and an absence of the dirt, trouble and labour associated with the handling of coal.

BURNERS.

At this stage it may be mentioned that the burners used for fuel oil are of three types and are operated either by air, steam or pump pressure and temperature upon the fuel itself, to break up the fuel which has been rendered more fluid by heating coils in the fuel tank into a finely atomised dust or spray. The object aimed at is to divide fuel into minute particles and to secure a correct air supply, so that perfect combustion is effected. If there is not sufficient air, the flame and chimney-top are smoky, indicating waste of fuel ; excess of air, on the other hand, is equally to be avoided.

Worthy of mention among burners are the following :—

(1) Air—Alldays & Onions, Bretts, Kermodes, Lucal, Mexican, Monometer ; (2) Steam—Holden, Kermodes, Lucal ; (3) Pressure—Kermodes, Meyer-Smith, Wallsend Slipway, White.

(1) Air jet burners use air as an atomising agent from ½ lb. to 50 lb. per sq. in., but in general industrial practice, air at pressure of about 2 lb. per sq. in., and at a temperature up to 200° Fahr., give the most satisfactory results. Exceptional cases may call for higher pressure. The fuel oil should reach the burner nozzle at a temperature of about 110° Fahr.

(2) Steam jet burners use steam as an atomising agent from 20 to 150 lb. per sq. in., but in general land boiler or locomotive practice, steam at a pressure of about 50 lb. per sq. in., and preferably superheated, gives the most satisfactory results. With both air and steam burners further economies are obtained, if the induced air for combustion is also preheated.

(3) The pressure system of oil burning entails the use of pumps, heaters and filters, and may be described as follows :—

The fuel oil is sucked by means of pump from storage-tank through duplex suction strainers (one of which can be cleaned while the other is in operation) and discharged through steam-heated fuel-oil heaters and duplex discharge strainers, similar in design and operation to suction strainers, to control valves to burners on boiler or furnace fronts. The number of burners in operation are controlled by means of these valves, the quantity of fuel oil consumed per hour being governed generally by the size of orifice in burner nozzle.

With regard to the subject of furnace design, I should like to mention a very interesting paper entitled the "Principles of Furnace Design," by Mr. A. D. Williams, which was given before the Cleveland Engineering Society, and is reproduced in their Journal for July, 1917.

NEUE DAMPFER CIE., STETTIN.—This company, one of the largest German line owner in the Baltic, is raising its capital from £155,000 to £220,000. *Hansa* regards this as "a sign of the confidence which is felt concerning the future of shipping in the Baltic." The fresh capital will permit the company to increase its fleet and extend its line traffic ; "this is the more necessary since Swedish and Danish owners in the Baltic have been much strengthened by the war." It is expected that Swedish competition in particular will be felt after the war. The Neue company, which was founded in 1856, had a capital of £130,500 until 1912. In 1914, it owned 23 steamships, totalling 27,000 gross tons. Several of these vessels have been lost during the war.

CONCRETE VESSELS IN GERMANY.

Brief reports appear in the German technical press concerning the Rüdiger system of building concrete vessels. This system is being used by the Eisenbeton Schiffbau A.G., and is characterised by the use of a special cement and a special system of reinforcement and framing. Concerning the concrete, the only information yet available is that it contains four materials, and has in its finished state a specific gravity of 1·05 to 1·25, *i.e.*, about half that of ordinary sand and gravel concrete. Rüdiger claims that his concrete is waterproof, dense and tougher and more elastic than ordinary concrete; that it surrounds the reinforcement thoroughly and has great strength in both compression and tension. The construction used is "a double cross-wise armouring with a total thickness of only 2 centimetres," the latter figure referring apparently to a motor ship of 75 tons deadweight capacity. A combined system of longitudinal and cross frames is employed, and it is claimed that the net effect of the special reinforcement and framing is to give a hull construction almost as light as that of a steel vessel, and far greater elasticity than can be obtained in an ordinary concrete vessel. The factor of safety of the hull is from 4 to 6 under all conditions of unbalanced lading and wave motion. The vessel can withstand grounding and considerable collision shocks, and should it be damaged repairs can be effected easily and quickly.

In addition to these special claims there are others, which are made for any concrete vessel, *e.g.*, rapid construction; long life and correspondingly low depreciation; no fouling or rusting and correspondingly low maintenance costs; no fire risk in respect of the hull; and great saving in iron and steel. It is, of course, the rapidity of construction and the saving in iron and steel which make concrete vessels so interesting a proposition under present circumstances.

The first cost of a vessel built on the Rüdiger system is claimed to be from 60 to 80 per cent. that of an iron vessel. A motorship of 75 tons deadweight capacity (69 ft. × 16 ft. × 9 ft.) made a satisfactory trial trip on the Elbe in December last, and a 300-ton coal lighter is being built by the Eisenbeton Schiffbau Gesell. for the Admiralty. Allowing for the probability of present claims being rather too optimistic, there is little doubt that the Rüdiger system offers advantages for vessels to be used on inland waterways and in coastal traffic. There is, however, nothing yet to show whether the system is suitable for sea-going vessels.

Germany has at her command one of the largest cement industries in the world; she has not been slow in developing other uses of reinforced concrete and is evidently not overlooking the possibilities of concrete ships. According to *Frankfurter Zeitung*, one of the largest German firms specialising in reinforced concrete work has established a shipbuilding department.

COMPASS ADJUSTERS.

The following gentlemen, having presented themselves for interviews, regarding their proficiency as compass adjusters for Government vessels, have been granted Admiralty certificates as below :—

CLASS (A).—ANY OF H.M. SHIPS OR AUXILIARIES.

Name.	Port.
Mr. T. McLeod	Liverpool.
Mr. A. K. Bell	Belfast.
Mr. T. W. Bruce	Liverpool.
Mr. A. J. Bruce	Liverpool.

CLASS (B).—T.B.D.'S AUXILIARIES AND SMALL CRAFT.

Name.	Port.
Mr. Perry	West Hartlepool
Mr. H. B. Wilson	Sunderland.
Mr. H. W. Hudson	West Hartlepool.
Mr. G. S. Hutton	Cardiff.
Mr. J. McQueen	South Shields.
Mr. R. Morris	Swansea.
Mr. J. Durkin	Middlesbrough

BOILER CIRCULATION.

The problem of increasing the efficiency of a boiler resolves itself into an endeavour to increase the quantity of heat transferred from the furnace to the water, for it may be assumed that in the majority of boilers, the combustion of the fuel is complete, and that all the available heat is obtained from the fuel, even if it is not afterwards utilised in the production of steam. Under what conditions then will the amount of heat transferred from the furnace to the water be a maximum? It must not be forgotten that there are only three ways of transferring heat from one body to another: (1) By conduction; (2) by convection; (3) by radiation; and that save for the very small part of its path represented by the passage through the metal of the furnace or tube, the first of these, assuming that the plate is clean, plays a very small part, for air water and especially steam are very bad conductors of heat. The transference of heat to the surface of the metal from the furnace will therefore depend almost entirely upon radiation and convection, with perhaps a larger proportion due to the former than to the latter, whereas the transference of heat from the inner surface of the metal to the water will depend almost entirely upon convection.

This subject of the transference of heat through a metal plate—*i.e.*, a furnace plate or a boiler tube, was dealt with very exhaustively by Professor W. E. Dalby in his famous paper on "Heat Transference," read before the Institution of Mechanical Engineers in 1909, and in an appendix the author quoted nearly 400 references to research work on this subject, which is an indication of the labour which has been devoted to its investigation, and many further investigations have since been carried out. In this paper Professor Dalby points out that transmission by conduction and convection is generally held to be conditioned by the fact that at the boundary of the hot gases in the fire-box and flues there is clinging to the plates a thin film of gas, in which convection currents do not apparently take place, and which offers a high resistance to the passage of the heat other than radiant heat, since the heat can pass across the film by conduction only. There is a similar film of water on the water side of the plate, though the resistance to the passage of heat through it is considerably smaller. Starting from a point in the interior of the mass of gas in the fire-box, the path of the heat flow to a point in the interior of the mass of water may be considered as made up of the following parts :—

1. The gaseous part of the path from the starting point to the gas film clinging to the plates.
2. The gas film itself.
3. The surface of contact between the plate and the gas.
4. The part of the path through the metallic plate.
5. The surface of contact between the plate and the water.
6. The water film.
7. The water from the film to the point in the mass of water.

If the plate be dirty, there must be added a layer of sooty deposit on the gas side, and a layer of scale on the water side, on which latter there may be in some cases a deposit of oily matter.

So far as the transmission of heat is concerned, the part of the path which requires special consideration is the metallic plate with its film coatings. Transmission of heat along this path may be likened to a flow of electricity through a circuit made up of elements of different resistances. The potential difference which causes the current to flow along the resistance of the elements of an electric circuit may be compared to the differences of temperature along the elements of a heat circuit. Just as it requires a large potential difference to force a current of electricity through a small element of a circuit of high resistance, so it requires a large temperature difference to force heat to flow along a small element of the path offering a great resistance. Difference of temperature may be regarded also as a "temperature head," by analogy with the flow of water; and with known data the temperature head could be plotted in a diagram. Such a diagram is shown on the next page, not from any data, but merely to show the main characteristics of the flow.

Starting from a point *a* in the interior of the hot gas, *Aa* represents the temperature, and this is shown as gradually falling to the value *Bb* at the surface of the gas film. The resistance of the film is extremely great, consequently the temperature falls to *Cc* in passing through it, the transfer of heat being effected by the temperature head *Bb*—*Cc*. There is probably a further drop of temperature represented by *cd*, which is required to force the flow across the surface where the gas film is in contact with the metal; corresponding with the potential difference at a joint in an electrical circuit. The temperature head required to cause the flow through the metal itself is *Cd*—*Ee*, with a further fall of head *ef* at the surface of contact between the metal and the water film. The fall of temperature head through the water film is *Ef*—*Gg*, until finally the temperature has fallen to that of the water, and the heat transmission through the mass of the water is continued by movement of the water particles.

The problem of obtaining the maximum amount of heat transference through the boiler plate is therefore a double one, consisting of not only maintaining as great a difference of temperature as possible between the two surfaces of the plate, but also of destroying or minimising the effect of the gas and water films clinging to the surfaces of the plate. The first part of the problem will be

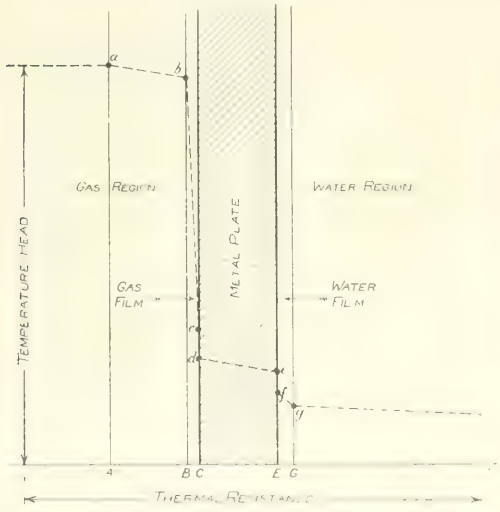
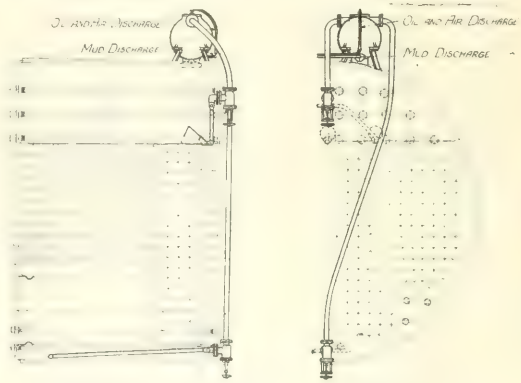


Diagram indicating Loss of Temperature Head, due to Films of Gas and Water.

solved if the combustion of the fuel is maintained in such a way that the maximum temperature of the flue gases is obtained on the one side of the plate, whilst on the other the water is kept in such a state of circulation that the colder water is always being made to displace the warmer water as fast as it is formed; and the second part of the problem depends for its solution on so great a motion of the fluids on both sides of the plate that they tend to "scrub" the surface of the plate, thus tending to prevent the formation of the gas and water films referred to above. But the maintenance of this motion of the fluids also has another beneficial effect beyond the elimination of these films, it tends to prevent the deposition of soot on the one side and scale on the other, this again leading to the transference of a greater quantity of heat than would otherwise be the case, and, moreover, reacting beneficially on the life of the boiler by reducing the tendency of the plates to over heat and diminishing the possibility of corrosion.

The motion of the flue gases is obtained by the employment of artificial draught, but the extent of the circulation which can be employed is limited by the fact that an excess of draught causes a too rapid combustion of the fuel, which leads to a loss of efficiency consequent upon the wastage of heat to the uptake, and also to excessive local heating at various parts of the furnace with its attendant evils. Other means have been devised such as the placing of spiral retarders in the tubes, the effect of which is to impart a screw motion to the furnace gases, which thereby more effectively scrub the surface of the tube, and it has been shown that the effect of these spiral retarders is to cause a larger amount of heat to be transferred through the tube.*

Considering now the production of motion on the water side of the tube plate, there are two methods which are available, first the natural method and second the artificial. In the natural method, advantage is taken of the fact that when the temperature of water is raised, its density is lessened, and it therefore tends to rise above the colder water from which it was produced, thus setting up convection currents. If the shape of the boiler be so arranged that as the warmer water rises cooler water is able to flow in and take its place, we get a definite circulatory system set up, as a result of which the whole of the water in the boiler is made to pass in close proximity



Hotchkiss Circulator as fitted to Single-ended Marine Boiler.

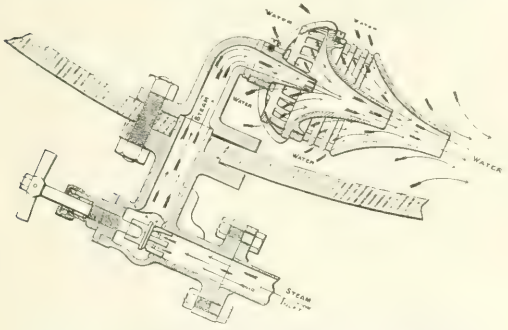
to the heated furnace plates or tubes. This is the principle which governs the design of the various types of water-tube boilers. The various types of fire-tube boilers, the marine or "Scotch" boiler, the Lancashire boiler, &c., do not yield a definite circulatory system, although convection currents are, of course, set up in the water space. It is, however, probable that in certain parts of the boiler these convection currents are in opposition to one another, and in any case it cannot be doubted that it will always be of advantage to set up artificial circulation in the boiler tending, if possible, to assist and augment the natural circulation due to convection. The artificial circulation may be promoted and maintained as a result of the convection currents set up, or it may be induced by external means, such as the force of a jet of steam.

The advantages of these different types of boiler circulators have long been recognised by marine engineers, and many different makes are upon the market. A description of one of each of the two types mentioned above will be of interest. The "Hotchkiss" circulator is of the automatic type, in which the natural circulation of the water is utilised to promote and maintain a still better circulation, hot water being taken from the upper part of the boiler and distributed along the bottom of the boiler [illegible] to the surface, thus setting

* "The Influence of Spiral Retarders on the Transmission of Heat through Boiler Tubes." By Mr. [illegible]. Transactions of the Institution of Engineers and Shipbuilders in Scotland.

up circulation of the whole of the water in the boiler. The diagram shows two views of the Hotchkiss circulator, as fitted to a single-ended marine boiler. It will be seen that the apparatus is in reality a syphon, the short arm and the long arm being connected at the top of the boiler by means of a spherical vessel, to which are fitted two discharge pipes, one at the top of the vessel for air and oil, and the other at the bottom for mud. The short arm of the syphon leads from the vessel to a junction piece from which three pipes, fitted with conical mouthpieces, lead just to the surface of the water in the boiler, whilst the long arm extends down to the bottom of the boiler and terminates in two or three long horizontal pipes, which open out at the back end of the ash pit, obviously the coldest part of the boiler.

The action of the "Hotchkiss" is most easily understood if one considers it a syphon operated by heat (a thermo-syphon). Movement is set up by warmer convection currents rising up the syphon through the higher connection on water level; these displace an equal bulk of cold water in the long leg of the syphon; but the bulk of cold water weighs more than the warm water rising, so the balance is disturbed and a regular flow commences, which rapidly gains speed as the inertia is overcome. After movement is well started it is very difficult to stop or reverse the flow, for by adding heat to the down leg the speed is increased, as was discovered by Mr. Yarrow. Therefore the course of the water is from over the furnace chambers,



Section of Weir Hydrokineter showing Direction of Circulating Currents.

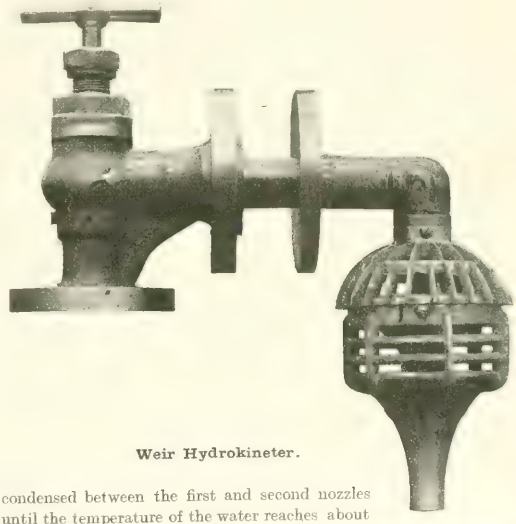
where the water is hottest, to the bottom of the boiler, where the temperature is much lower. On leaving the pipes, either by perforations or in one solid flow, the water immediately starts to rise, because of its lower specific gravity, thus disturbing and warming the bulk of water below the furnaces and spreading heat to all parts of the boiler equally. This movement commences soon after lighting fires, and continues till boiler is again nearly cold, whether steam is being used or boiler only standing by. Hence most of the troubles of boilers from unequal expansion are avoided, and the boiler is kept free from mud, oil and air, which tend to collect in the reservoir at the top of the syphon, from which they are blown out, usually once during each watch.

The system can be filled by two methods:—

(*a*) By closing all air outlets on boiler except air discharge on reservoir, and pumping water into boiler; by the time working level is reached there is generally sufficient compression on the air in steam space to force water up and fill apparatus. Then on closing air cock the system remains full.

(*b*) By closing all air outlets on boiler except air discharge on reservoir. Lighting up fires as usual, when in a short time there will be sufficient heat to expand the air and cause enough pressure to force water up into the connections; as soon as the water flows out of air cock it must be closed, when circulation will immediately start. This system being once filled remains so unless air is admitted to top of syphon. The atmospheric, or boiler pressure, keeps the syphon intact. The rolling of a vessel may put funnel temporarily out of water, in which case the circuit of water is broken and circulation momentarily ceases, but immediately the circuit is completed by return to normal level of water the circulation is renewed.

Of the other type of circulator, in which external means are employed to set up motion of the water, one of the best known is the Weir Hydrokineter. It consists essentially of three nozzles, the first or steam nozzle being fixed on the inside of the boiler shell, and set in the direction the circulating current is to take. On this nozzle are fixed the two outer or induction nozzles, and the back end of the one and the outer ring of the other are perforated to admit water between. Steam from the donkey boiler is admitted by the check and stop valve to the steam nozzle, and getting condensed throws a jet of water through the second nozzle. The volume of water is increased in passing through the outer nozzle. It then enters the bottom of the boiler and induces a current, as shown by the arrows in the diagram. The purpose the two outer nozzles serve is more effectually to direct the force of the jet in the direction circulation is desired. The water being directed on the steam jet, the steam is



Weir Hydrokineter.

condensed between the first and second nozzles until the temperature of the water reaches about 270° Fahr. The outer nozzle then comes into play as a condenser, keeping the steam from expanding, and directing the jet straight into the water at the bottom of the boiler, until the pressure reaches that of a steam jet. The check valve now closes to prevent the water being forced back into the donkey boiler. In single-ended boilers the hydrokineter is placed on the centre at equal distances from the ends; with double-ended boilers two hydrokineters are used, and these are placed one-fourth the length of the boiler from each end.

Enough has been said to demonstrate the means whereby circulation of the water in a boiler may be obtained, and the success which has attended the use of these and other types of circulators, together with the wide field in which they are now employed, is sufficient proof of the fact that marine engineers are alive to the importance of maintaining an adequate movement of the water in a boiler in order that the amount of heat transmitted through the plates and tubes may be a maximum. It is not unlikely that further investigation in this field in the direction of the provision of even better circulation of both water and furnace gases would be amply repaid by the increased boiler efficiency which would follow.

SOME INSUFFICIENTLY CONSIDERED DETAILS OF SHIP CONSTRUCTION AND EQUIPMENT.

By C. Waldie Cairns, M.Sc.*

(*Concluded from page* 13.)

Deck Machinery: Steam Pipes, &c.

Windlasses.—Better provision might well be made for means of closing the chain pipes through windlass bedplate when a vessel gets away into deep water. If the windlass makers could give us a little higher lip on the chain pipes on the top of the bedplate to enable a canvas coat to be lashed to it, and also to the cable, there would be more security against getting unnecessary water into the chain lockers when the steamer "digs her nose into a head sea."

At the present time makeshift methods of covering up the closing plate usually supplied for the top of these chain pipes with Portland cement are sometimes adopted. These methods would be more effective if the plate was so cut as to make a more complete closing and to drop a little way into the chain pipe and rest there on an internal lip.

Winches.—Shipbuilders are generally shy about lifting the winches high enough off decks to enable chipping and painting to be carried out underneath; 9 ins. is a very moderate height for this purpose.

Hand-steering Gear.—Most cargo ships with steering engine amidships are still fitted with a hand-steering gear aft. This is in practically all cases so slow and clumsy as to be almost useless. In some cases reported to the writer where, through breaking of steering chains, the hand gear aft has had to be put into operation, a smash-up of the gear has been the result. Possibly straining during coupling up with the rudder lashing about may have had something to do with the trouble. At the same time the writer was never very strongly impressed by the amount or disposition of material in these gears; the nuts always appear so very weak in proportion to the large screws employed.

Some builders have, in recent examples, abolished these hand gears in favour of an arrangement for steering by means of the after winches, and with a good arrangement this would appear to the writer likely to produce better control of the ship than could be maintained by even a large number of men at the hand wheel, which must really be too slow for effective control, whether the ship is under her own steam, or broken down and in tow.

Probably an efficient arrangement of this kind would obtain sanction as an alternative method of steering from the Registration Societies. This system seems worth working out.

Stove Pipes.—Lack of thought is often shown in the fittings employed for carrying stove pipes through wood decks or wood sheathing. If you inquire regarding this matter in the drawing office or in the yard manager's room, you generally receive a most confident assurance that an excellent system is employed, and possibly a very good sketch may be submitted. If, however, you follow the matter up in the yard, you often find that a most rudimentary fitting, consisting of an iron coaming pipe with a narrow iron flange ring, is being fitted by the carpenter. If he is a thoughtful tradesman, and if the flange on the coaming pipe provided by the store happens to be large enough to permit, he will possibly cut the wood of the deck or the sheathing ½ in. each side larger than the pipe, and if he happens to think of the matter, he may put a strip or two of asbestos millboard in the space thus formed. The chances are, however, that if this is a wood deck, there is nothing to prevent the asbestos from dropping through, and the chances are still greater that if the stove pipe passes through a space in which there is a wood ceiling and beam casings below the wooden deck, the signet will not be long enough to come well through both the deck and the ceiling, so that there is nothing but the thin and easily-corroded stove pipe between the hot gases and the space at the back of the ceiling. A really good system requires to be worked out and made universal for stove pipe coamings.

Small Fittings.—Perhaps no item among the smaller details of ship's equipment causes more trouble during the lifetime of a ship than port lights or scuttles.

As a mechanical contrivance the ordinary side scuttle leaves much to be desired. Tightening is effected by a single screw, the balancing reaction at opposite side of glass frame being the dead inadjustable support of a hinge bolt. Hence, if the rubber packing is hard and rather thick, the means taken by "Jack" to cure the leak that is soaking his surroundings with sea-water—putting the poker-end or a spanner into the loop of the nut, and heaving up tight—is likely to result in a serious straining of the glass frame. Another frequent cause of strain is the effect of a gradual filling up by successive paintings of the slight clearance between spigot part of glass frame and inner diameter of the cast-iron or main frame. Here "Jack" never dreams of the cause of the trouble, and "heaves her up tight"—tight enough, but not watertight.

No care in design will ever make a side-light absolutely "fool-proof." They would certainly be more satisfactory if a hinged screw were fitted on hinge pin, with sufficient play in hinge eyes to permit the screw to apply some pressure. The writer thinks this system was at one time on the market, but did not "catch on." A double-jointed hinge would be rather better, with a similar screw, as it would not depend on any play in hinge eyes.

To withstand blows of seas and pressure from fenders, &c., side-light frames applied by some builders to forecastle and poop sides should be much stronger, particularly when, as usual in cargo-boat practice, cast-iron flanges are used.

Any guidance specification in referring to this matter might well stipulate a minimum weight of brass for the glass frame, and of cast iron for the main flange, as well as giving sections of these parts and thickness of glass.

A paper of this length cannot by any means exhaust the list of matter requiring greater attention in ship design and construction.

Possibly, much that is taken for granted and carried out without question under present practice would not stand criticism if looked into. Take, for instance, a hatch coaming with heavy flange on lower edge—considered as a girder—its section is appallingly inefficient, its neutral axis is most unsuitably placed, and the edge which has to stand compressional stress is of the poorest form for the purpose, the hollow half round moulding being useless except to prevent chafing of the tarpaulin, its rivets are not even in shear to enable it to help the plate efficiently.

Recently, builders and the registration societies, after a Royal Commission, woke up, and have applied bulb angle stiffeners to coamings in certain cases, in a position that helps against the compressive stress, both by raising the neutral axis and by adding lateral stiffness to the plate.

Possibly, there are other details where equally radical treatment would be justified, and this paper will not have been useless if it leads other members, in the discussion which the writer hopes to evoke, to draw attention to, and, if possible, indicate the necessary corrections for such errors in practice.

Discussion.

Mr. J. J. Welch, Professor of Naval Architecture, Armstrong College, Newcastle, remarked that, as Mr. Cairns said, the amount of money involved in making the suggested modifications and additions was not large, but they all knew that the difference between efficient and inefficient equipment details meant a great deal to those having subsequent charge of the vessels. Some of the changes recommended by the author had to do with the practical working of the ship at sea or in port, and the speaker had no doubt that, with regard to these, shipmasters, superintendents and others would give the Institution the benefit of their experience. The suggestion to fit a short length of cable on each stockless anchor for the purpose stated by the author seemed reasonable, and the

* Abstract of paper read at Newcastle-upon-Tyne, on December 21, 1917, before the North-East Coast Institution of Engineers and Shipbuilders.

specification of some reasonable "degree of tolerance" for cables seemed desirable, although it would, apparently, add very appreciably to the work at the testing house.

One of the most interesting portions of the paper was that dealing with cargo gear. The fact, vouched for by the author, that a single cargo block, tested to 7½ or 10 tons, had been considered, by some, sufficiently strong for five tons when working under the conditions indicated certainly surprised the speaker. It was clear that, including the effect of the fall rope, the possible dead pull on the block would be nearly 10 tons, and that the proof test should be much in excess of that to cover the effect of live load. With two double or treble blocks, the influence of the fall rope was much lessened, the dead pull on the block being greater than the weight lifted by about one-fourth and one-sixth respectively, the additional sheaves in these cases, of course, involving friction, which must be taken into account in calculating the pull on the fall rope. With double and treble blocks, therefore, the disparity between the necessary proof load and the weight of lift would be lessened. The procedure in all cases of that kind would seem to be to calculate the dead pull, due to the weight and the tension of the fall rope after including the effect of the friction of sheaves, and then to order a block tested to twice that amount to allow for live load effect. It was within the knowledge of many that the heavy boat derricks on naval vessels used to be—probably still were—tested when the gear was complete on board by lifting a dead load equal to twice the weight of the heaviest boat. That procedure duly took account of the fall rope pull and tested subsidiary fittings. The author had calculated the stresses on various parts of the single and double blocks considered. The single block was manifestly unequal to its work when used as indicated in the paper, and even the double block under proof test gave calculated stresses which were distinctly on the high side. That seemed a question of design of block and this could only be finally settled after exhaustive examination of known failures: as such, it seemed primarily the concern of the block makers, although they would, he did not doubt, welcome the co-operation of the users. The shipbuilder should be able, as already suggested, to determine the proof load for the required block, and the maker should then furnish the well-designed article tested to that load.

The case of the fractured bulwark plate mentioned in the paper was another example of the unwisdom of allowing abrupt discontinuity of strength in any part which, in any way, resisted longitudinal bending.

The stove-pipe fitting was not very satisfactory, but the speaker thought the method adopted in the Royal Navy was preferable to either of the alternatives suggested in the paper. That method consisted in fitting a gunmetal deck plate with a coaming 8 in. or 9 in. long of the same material screwed thereto, watertightness at deck being secured by use of a leather washer. The funnel passed inside the coaming with 1 in. air space all round, and a thin metal hood attached to the funnel covered the top of the coaming. Thus, thorough watertightness was secured, and danger to adjacent woodwork eliminated.

The speaker believed that the author's suggestion that many items of a ship's equipment could be standardised with advantage, for one sound reason that that procedure would tend to lessen cost, would be beneficial if adopted, although the work involved would be arduous. He hoped that one result of that paper would be to induce the Institution to examine, at any rate, the possibilities there might be in the direction indicated.

Mr. J. T. Batey, of Hawthorn, Leslie & Co., Ltd., said that he was, in the main, in full accord with all the suggestions made by Mr. Cairns. The author had, evidently had a pretty severe experience in fitting out his ships. It was pleasing, however, to find that the author did not suggest that all shipbuilders neglected all the details to which he referred. The speaker could assure Mr. Cairns that shipbuilders of whom he knew, gave very careful consideration to most of the details he had brought forward. Mr. Cairns gave his own cure of all his evils when he said, "Why not specify what you think good in the ships with which you are concerned, and let others put up with what they get?" It might be said, "How can you, in a specification for a ship, specify all this detail?" but the speaker assured Mr. Cairns that such was done,—if not in the exact details the author mentioned, the spirit of them was specified. The spirit in which the contract had to be carried out was understood between the buyer and the builder, and a great many of the faults the author complained of were overcome by the joint consideration of the superintendent responsible for the vessel and the shipbuilder. Of course, the speaker's remarks had a bearing upon the mercantile marine only and had no reference to the Navy.

As to Mr. Cairns' warping arrangements, the speaker agreed with him that many fittings one saw in ordinary vessels were scandalous. He had seen a brand-new rope put over the ship's side and ruined in five minutes. That was the fault of the shipbuilder, and the superintendent. Arrangements had been made—one could see them every day—for fairleads designed in such a manner that ropes ran most smoothly over them, in and out, without any damage whatever. As to winches, that was a matter for the owner to decide as to what he wanted. He saw a vessel the other day with 26 winches and 30 derricks on board. Of course, some shipowners would say that was ballast to carry about, but that shipowner would say that he required these winches and these derricks, lifting anything up to 50 tons. Every part of that derrick gear was carefully considered, stresses were worked out and the correct margins allowed for each of the fittings.

He agreed that accidents would happen when things were left to the blacksmith's eye. He had a great respect for blacksmiths, but he thought the combination of science and experience would produce the best results. The part dealing with cargo gear was one of the most important in the paper. With all the suggestions therein he was quite in accord. As to the fractured bulwark plate, the speaker agreed that such breaking in the longitudinal strength of the vessel should never be allowed. As vessels got bigger and deck-houses became longer, the best means of keeping them watertight and habitable would be to put a light steel deck on top.

He hoped that when Mr. Cairns and others were again on the market for vessels, they would start at the beginning and their troubles would cease. Before the war, the order was usually given to the shipbuilder who cut his prices keenest. As soon as the contract was signed, the superintendent came along and wanted a first-class liner for the money, with the result that disputes arose. One could not possibly buy in the very cheapest market and get the best of vessels. All shipowners did not attempt that; there were certain who knew exactly what they wanted and told the builder at the very commencement. The shipbuilder who knew his customer, and knew what class of work he had to turn out, very often got the order, although his price was not the lowest.

Mr. Wm. Alexander (Glasgow) stated that practically all the small fittings in connection with ships could be standardised to the great advantage of owners and builders. The first result would be a vast economy in time and money, and the quality would be enormously improved, too, in many cases. After that, cutting of prices would really be the result of efficiency in the makers' works and not of the sacrifice of the quality of the material.

As to cargo blocks, if Mr. Cairns' suggestions were carried out, the speaker thought that most makers of these articles would have cause to bless his name. He wished Mr. Cairns had pursued his inquiries into stresses in the direction of wood blocks, because he would have got figures that would have made those he got for iron blocks pale into insignificance. It was a pity that wood blocks should get such a bad name because of the badness of the design and binding, in certain cases, because they were much better for the ropes and did not cause them to fray so much. Another

important matter in standardisation should be an endeavour to reduce the number of parts. The sizes of wood blocks, for example, could easily be reduced to five, and so with other fittings.

Mr. W. S. Abell, chief ship surveyor to Lloyd's Register, wrote, as to the author's suggestion with regard to cables, there must be a differentiation as regarded various trades, such as coasting collier, River Plate trade or Eastern trade. The writer did not think it desirable to differentiate between coasting and general trades or between coasting and other colliers, for experience indicated that the requirements laid down by the classification societies for cables for small coasting ships were not in excess of the needs of the vessels. As regarded other trades, the societies only laid down minimum requirements which were really minimum average requirements. It might be opportune to call attention to the fact that Lloyd's Register had recently agreed, as a war emergency measure, in view of the shortage of material and labour, to an appreciable reduction in the minimum requirements for chain cables of vessels over and above about 3,000 tons gross, varying from about a minimum reduction of 15 fathoms to a maximum reduction of 60 fathoms in larger vessels.

Mr. E. W. De Rusett wrote remarking that the author's suggestion of the use of graded equipment specifications to be classed under distinguishing titles was worthy of the careful consideration of owners and shipbuilders, as in them every detail could be stated, and as the grade and scope of the vessel would be defined, estimates could be more closely made. As these and the general specification would have to be of a standard character, they would probably have to be drawn up by a committee composed of shipowners, shipbuilders and engineers selected from leading firms and institutions in the United Kingdom, which committee, it was suggested, might be centralised in that Institution.

Mr. Wm. Scott, superintendent to the Leyland Line, Liverpool, wrote endorsing the author's views. It was, unfortunately, a fact that few tramp builders followed up the performances of their ships for any length of time. That was, perhaps, hardly their fault, as the major part of tramp owners wanted an article at the least cost and, very often, the vessels passed on quickly from owner to owner afterwards. On the regular lines, which had timed sailings, the vessels were often built by one firm or more firms which were in constant communication with the owners or their officials, so that some kind of continuity was maintained. It would, therefore, be a sound move to have some standard basis of equipment as a starting point. The author's remarks as to cargo gear were all on the right side. Winches would be better of being raised to 24 in. off the deck on a table, as in many vessels with electric winches, as, when the winches were as close to the deck as 9 in., it was difficult to get at the plates underneath.

Laird & Son, Ltd., Irvine, wrote stating that a *sine qua non* of all blocks required for the merchant marine was that the component parts should be of a quality which would ensure test loads being applied commensurate with the purposes for which the blocks might be utilised and of sufficient strength to withstand whatever stresses might be produced by surgings and shocks outside the ordinary calculation. The iron or mild steel used for bindings and other mountings should therefore be of the best description.

All wrought iron blocks, together with internal or external iron bindings for wood blocks, should be tested by the manufacturer to the test loads required by shipbuilders, to meet the demands of derricks or lifting gear, according to a definite safety load rule, which should be equivalent to a factor of safety of four. A certificate of testing by manufacturers or by Lloyd's should be issued with all boats' derricks and lifting gear, and each block should bear a distinguishing number corresponding to the certificate. Owing to misapprehension which existed regarding relationship between test loads, working loads and lifting loads of blocks, the firm suggested that the term "working load" should be entirely dispensed with and that the test load on blocks should be four times the load to be lifted.

Loveridge, Ltd., Cardiff, wrote that, as makers of ships' blocks, &c., they had long been contending that insufficient attention was being given to the question of safe loads on blocks. As the author stated, blocks were frequently spoken of as 5-ton blocks which the makers really intended to represent the full load on the pin and were for only from two to three tons d.w., varying according to the angle of the derrick. On the other hand, shipbuilders' specifications varied immensely. Not long ago, the writers had two inquiries, one from well-known builders on the Clyde, asking for blocks for a 5-ton derrick, these blocks to be tested to 20 tons (which meant a breaking strain of 40 tons). The other inquiry was from the North-East Coast for blocks for a 5-ton derrick, these to be tested to 7½ tons, with a breaking-strain, therefore, of 15 tons, or a difference of 25 tons in the strength of blocks from, apparently, the same working load.

Emerson, Walker & Thompson Bros., Ltd., windlass makers, &c., Dunston, Gateshead, wrote stating that the difficulty of making a cable lifter to fit the Admiralty sizes of cables lay in the varying pitches of the special links and shackle. These pitches gave too little clearance between the shackle pin and the second link, and the snugs of the cable lifter had to be weakened to fit in the limited space, whilst the pitch on the bow side of the shackle was too long. The result of these defects was that small errors in making the cable caused a misfit on a correctly made cable lifter, and that had always been recognised by the Admiralty, as shown by their minute instructions as to the amount of error permitted.

Mr. W. A. Woodeson, of Clarke, Chapman & Co., Ltd., engineers, &c., Gateshead, wrote observing that neglect of the questions raised by Mr. Cairns often resulted in serious delays, breakdowns, stoppages and large expenses. It was most regrettable that the form of certificate issued from the proving houses only recorded the length and breadth of a link without giving the average length overall of ten common links, at the same time stating the degree of tolerance. It was most essential that none of the links of a cable should fall short as to the outside length of the dimensions given upon the usual Admiralty cable scale issued by windlass makers, but an excess length could be allowed over these dimensions equal to one-tenth of the diameter of the material of which the common links of the cable was made. A latitude of one-tenth of the diameter of the material of the common links could be allowed in the outside width of the several kinds of links.

Colonel David R. MacDonald said that, on a first glance through the paper, one was apt to form the opinion that the author had been unfortunate in his experience of shipbuilders, but a more careful study led to the belief that it would be more correct to conclude that his shipowning friends were more responsible for the defects pointed out than the author cared to state. Some shipowners were too prone to go into the cheapest market and certain shipbuilders, whom the author called "mean," were thereby induced to put inferior articles into ships for which they had secured contracts at very unremunerative prices. It was true that the actual difference in cost of each article might be small, but the items were so numerous that their total cost amounted to a considerable sum. However, on whomsoever the responsibility rested, the fact remained that the principle of standardisation advocated by the author would, to a large extent, cure many of the evils referred to.

Mr. Archibald Hogg said the paper might give the impression that builders did not know what they were doing, but was there not some method in their madness? Nearly everything one bought in a city shop cost the purchaser two or three times its first cost of making, but the owner of a ship got it at first cost plus a very small percentage, sometimes at first cost and even less. The ship was built to an agreed specification and, sometimes, under the superintendence of inspectors who seemed to set themselves to get all they could out of the builder. The price quoted was a lump sum by builders in competition, and was a very close one estimated on the actual prices of ships already built, and owners pressed for reductions before placing the order. Builders, also naturally sought the

cheapest things and had, for years, been cropping so that now everything on the ship was brought to the very least weight and cost. Perhaps what he had said might be a reason for the deficiencies mentioned by the author, but it did not excuse them.

Replying on the discussion, Mr. CARUS expressed his gratification at the lively discussion evoked by his paper. The question of chain cables appeared to be becoming much more important than he dreamed of. He heard that morning of another ship in which, quite recently, the equipment should have been condemned, only the owners could not afford to have the ship stopped. It had come to his knowledge that the Admiralty cable scale had been practically just as it was now in proportion right from the time of the old windlass with the long wooden barrel over which the chain was somehow trailed. If they would do anything towards useful standardisation of cables, he thought they would all have reason to be gratified. As to the general question of standardisation of ships' fittings, it seemed symptomatic of the tendency of our time towards co-operation that the suggestion had met with approval from those manufacturers who had given them their views, as well as from Professor Welch, Mr. Scott and others who saw the matter from a different angle. The consensus of opinion appeared to be that an improvement in quality and substantial reduction of cost could be attained by a wise measure of standardisation, both as to specification requirements and as to manufacture of fittings.

In the case of such items as cargo blocks, there would probably always be specialities on the market. A standard specification would not necessarily kill that, but would ensure that any manufacturer making such a speciality would bring his details up to a proper standard of strength, and the manufacturer of a really good article would fare better than at present, as the competition against him of makers of gear unfairly cheap through dangerous lightness would be eliminated.

THE PRESIDENT remarked that there was no doubt, as had been said in the discussion, that the shipbuilding trades, in common with a good many other trades in this country, had suffered from the rapid pursuit of the fetish of cheapness. The Council of the Institution had decided to appoint a small committee to consider the question of how far ships' fittings could be standardised and, if possible, to draw up a North-East Coast Institution specification which should prescribe a minimum scantling for all the various fittings that could be so treated, a scantling which should provide that the fitting, whatever it was, should carry out its work efficiently and, at the same time, should not be unnecessarily costly.

CONSCRIPTION OF SHIPPING PROFITS.

The effects of war taxation and war risks insurance on shipping companies are shown in circulars issued by Charles Radcliffe & Co., Cardiff, to the shareholders of the Snowdon and the Rochdale Steamship Companies, of which companies they are the managers. These two companies have subsidiary holdings, each to the extent of £15,000 in Charles Radcliffe & Co., Ltd., owners of the ss. *Atherstone* and the ss. *Penistone*, and the accompanying auditors' certificates show the amounts paid by them in income-tax, excess profits duty, and in war risks insurance since 1914.

The circular addressed to the shareholders of the Rochdale Steamship Company, Ltd., is as follows :—

"Dear Sir or Madam, Annexed hereto we beg to hand you a statement of the amount of income tax, excess profits duty and war risk insurance paid by this company up to the issue of the last annual account. The amount of income tax is £5,844 6s. 6d. ; excess profits duty, £3,056 14s. ; and war risk insurance, £14,988 0s. 8d., making a total of £23,889 1s. 2d., or nearly 92 per cent. on the capital of the company.

"From these figures we think you have nothing to fear from the conscription of capital ; it would pay the Government much better to run your property, and make fabulous profits, in addition to the sums already mentioned.

"We may state that the *Rochdale* has only just arrived in the United Kingdom with a cargo of wood which she was bringing under charter of the Government, who appropriate the freight and pay the company a Blue-Book rate of about 6s. 4½d. on the deadweight. In addition, this steamer had the misfortune to run ashore and had to be towed into port, where she now awaits discharge and after which she will have to dry-dock for repairs, which, we regret to say, as far as can be ascertained at present, are of a most extensive character and will take many weeks to execute, during which time the Government, of course, will pay no hire.

"Furthermore, we give you the figures in respect of Charles Radcliffe, Ltd., which owns the steamers *Atherstone* and *Penistone*, and in which company the Rochdale Steamship Company, Ltd., has a subsidiary holding of £15,000. This company up to the end of the year has had to pay £4,635 8s. 1d. income tax, £31,764 6s. excess profits duty, and £130,061 8s. 4d. war risk insurance, making a total of £166,461 2s. 5d.

"These figures are truly amazing, and will give shareholders a very fair idea of how the huge freights that shipowners are supposed to pocket have been appropriated.

"All our steamers, fortunately, are still afloat, for the loss of any one of them would subject the brave lives of those aboard to the utmost danger. They have all been requisitioned by the Government, with the exception of the steamer *Penistone*, which is chartered to the French Government, and for which we have to pay a war risk insurance premium of £6,562 10s. per month, or seven-twelfths of her whole freight, being at the rate of £78,750 per annum, which will leave a very small margin of profit indeed, if any.

Ths following is the annexed audited statement, showing the amounts paid in each year :—

THE ROCHDALE SS. CO., LTD.

Income Tax.		Excess Profits Duty.		Total Taxation.	War Risk Insurance.	
Year.	£ s. d.	Year.	£ s. d.	£ s. d.	Year.	£ s. d.
1914-15	614 19 2	1915	960 10 0		1914	861 5 0
1915-16	779 2 4	1916	2,096 4 0		1915	3,175 1 0
1916-17	2,011 5 0				1916	2,252 19 8
1917-18	2,439 0 0				1917	8,698 15 0
	5,844 6 6		3,056 14 0	8,901 0 6	Total	14,988 0 8

CHARLES RADCLIFFE, LTD., RE SS. "ATHERSTONE" AND SS. "PENISTONE."

Year.	£ s. d.	Year.	£ s. d.	£ s. d.	Year.	£ s. d.
1914-15	No tax paid	1915	12,455 14 0		1914	2,229 2 6
1915-16	754 9 1	1916	19,308 12 0		1915	8,511 17 10
1916-17	1,163 3 9				1916	28,854 16 8
1917-18	2,717 15 0				1917	90,465 11 4
	4,635 8 1		31,764 6 0	36,399 14 1	Total	130,061 8 4

In their circular to the shareholders of the Snowdon Steamship Company, Limited, Charles Radcliffe & Co. point out that in income-tax, excess profits duty, and war risk insurances the company has paid £32,938 4s. 1d., or 173 per cent. on the capital, to the Government. The following is the audited statement :—

THE SNOWDON SS. CO., LTD.

Income Tax.		Excess Profits Duty.		Total Taxation.	War Risk Insurance.	
Year.	£ s. d.	Year.	£ s. d.	£ s. d.	Year.	£ s. d.
1914-15	No tax paid	1915	1,464 16 0		1914	771 0 1
1915-16	do.	1916	9,009 12 9		1915	1,993 4 4
1916-17	do.		—		1916	6,098 14 11
1917-18	1,011 10 0		—		1917	22,956 1 1
	1,011 10 0		10,474 8 9	11,172 18 9	Total	31,865 0 5

CHARLES RADCLIFFE, LTD., RE SS. "ATHERSTONE" AND SS. "PENISTONE."

Year.	£ s. d.	Year.	£ s. d.	£ s. d.	Year.	£ s. d.
1914-15	No tax paid	1915	12,455 14 0		1914	2,229 2 6
1915-16	754 9 4	1916	19,308 12 0		1915	8,511 17 10
1916-17	1,163 3 9				1916	28,854 16 8
1917-18	2,717 15 0				1917	90,465 11 4
	4,635 8 1		31,764 6 0	36,399 14 1	Total	130,061 8 4

STEAMSHIP APPLIANCES.

IMPROVED FULL-BORE REDUCING VALVE.

The illustrations below represent two views of an improved full-bore reducing valve, made by Cockburns, Ltd., of Cardonald, Glasgow, and protected by the D. Cockburn-MacNicoll patent. The design presents many interesting and novel features.

From the illustrations it will be noticed that the renewable seat of the main valve is combined with the operating cylinder, the combination forming a cage. A clearance is left between the cage and the outer valve casing or chest, which allows of expansion. The cage is secured by a central screw through which passes a spindle to enable the valve to be positively opened at any time should the automatic action be deranged. A diaphragm forms the cover joint and extends across, making a joint with the cage as well.

Accommodation is made for the difference of expansion between outer casing and the cage when under temperature, by the design of cap, which latter is the medium of making the joint on top of cage as well as the joint between the bottom of cage or seat portion and chest seating. The control valve chest is a bronze metal stamping.

When superheated steam is present the main chest is made of cast steel, the control chest being maintained as a bronze stamping, while all parts subject to the superheated steam are of a nickel alloy.

The action is as follows:—On screwing down regulating screw on control valve steam passes through small valve to the top of the piston. This opens up the main valve and allows steam to pass through same to outlet side. The steam on the outlet side now passes to the underside of the diaphragm and lifts same, thus allowing the control valve to be seated. It will be supposed that the pressure on the diaphragm that allows of this is 5 lb. per sq. in., then, in other words, this will be the reduced pressure to which the regulating screw has been adjusted. The supply of steam is now cut off to the piston, and the higher pressure on the top of the piston leaks past the latter to the reduced side. The main valve is then closed. On the reduced pressure dropping again the control valve opens up and the same cycle of operations takes place.

In actual working the valves do not open and close in the cycle described, except on steam first being turned on. After the flow of steam has settled down, the valves float the main valve in such a position as to meet the demand.

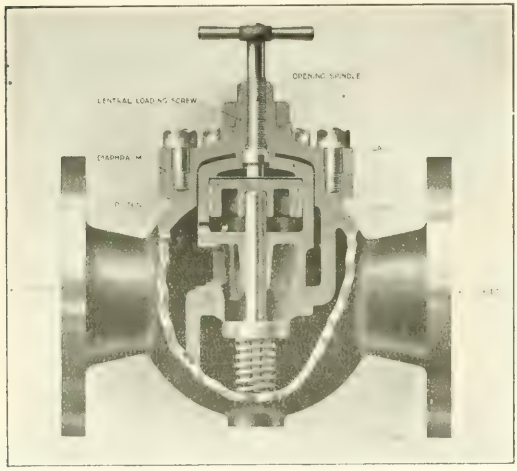
In adjusting with steam on, the regulating screw should be taken right back and then slowly screwed down until the required reduced pressure is reached and then locked by the guard.

It will readily be appreciated that with automatic mechanism of this nature the presence of a quantity of water is undesirable, and likely to affect the efficient automatic action of the valve, so that wherever possible these should be fitted in the highest part of the system, so as to keep water from them as much as possible.

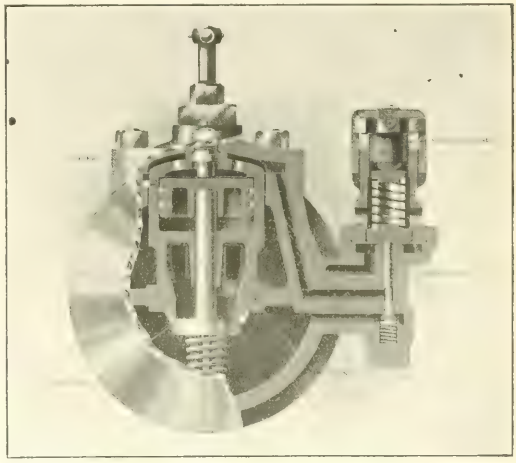
Another important consideration is the position of the valve relative to the machine which is using the reduced steam. For reciprocating machinery or machines which use steam intermittently, and thereby likely to cause pulsation, the valve should be as far away from the machine as possible. This is not so important for turbine machinery, or where there is a continual flow.

In other types of reducing valves it is often found necessary to make provision for a reverse flow of steam or back by-passing. To do this automatically, a separate valve has to be provided. With the valve, as illustrated, a reverse flow of steam simply lifts the main valve and passes through.

This fitting will work equally well with air.



Sectional Side Elevation.



Sectional End Elevation.

Improved Full-Bore Reducing Valve.

SHIPPING SPECULATION IN GERMANY.—*Hansa* has just issued a vigorous warning against over-speculation in German shipping shares. Prices have been rising gradually for some time past and have recently started to climb very rapidly. Reasons which have been advanced to account for the rise are the introduction and passage of the Reconstruction Bill and the very high prices paid by the Government for six German steamships to be passed on to Holland in replacement of six Dutch vessels sunk. The profitable sale of six vessels by five different companies cannot, however, be responsible for a sudden and considerable rise in the prices of nearly all German shipping shares. The true explanation is to be found in a contagious fever of shipping speculation, particularly rampant amongst inexperienced speculators and inflamed by over-valuation of the reconstruction law and the high prices secured for the above-mentioned half-dozen vessels. "Amateur" speculation of this nature is no uncommon thing. It is contagious and cumulative in its effect. The boom is rapid and the end is reaction and disaster to the small investor.

GENERAL NEWS SECTION.

PERSONAL.

Mr. Roger Beck, a director of Baldwins, Ltd., has been elected Chairman of the Swansea Harbour Trustees, in succession to Sir Griffith Thomas, resigned.

Mr. Joseph Evans, Secretary of the Mersey Ship Repairers' Federation, will leave Liverpool shortly, as he has accepted an appointment with the Admiralty in London.

Mr. Thomas Rose, shipbuilder, of Sunderland, has been elected a member of the River Wear Commission to fill the vacancy caused by the resignation, owing to ill-health, of Mr. V. T. Thompson.

Mr. W. Phillips, J.P., Sir John M'Farland, Bart., J.P., Sir John B. Johnston, J.P., Mr. J. H. M. Connell, and Mr. R. H. Smyth, have been elected members of the Port and Harbour Board of Londonderry.

The death has occurred, at the age of 58 years, of Capt. Robert Murray, who for 25 years was in command of steamers owned by Balls and Stansfield, North Shields. He retired from the sea a year ago.

Mr. Edward F. Nicholls (underwriter of the London Assurance) and Mr. E. L. Jacobs (underwriter of the Alliance Assurance Company) have been elected Chairman and Deputy-Chairman respectively of the Institute of London Underwriters for 1918.

The death has taken place of Mr. George J. Theakstone, a Liverpool shipping man, and a past chairman of the Liverpool Shipping Staffs' Benevolent Association. Latterly he was in business on his own account, but for many years previously was cashier with Crow, Rudolf & Co., steamship owners.

Mr. Frank Workman (Workman, Clark & Co., Ltd., Belfast) and family have presented £500 to the Royal Victoria Hospital, Belfast, to endow a bed in memory of their only son, Lieut. Edward Workman, M.C., Royal Irish Rifles, who was killed in action in 1916. Lieut. Workman was a shipyard manager with the firm.

The Marquis of Londonderry, Mr. H. M. Stobart, and Mr. J. T. Bailey Hawkins, who are, and have been for a considerable time, on active service, have been re-elected members of the River Wear Commission. Mr. Thomas Rose has been elected a shipowners' representative on that authority, in succession to Mr. V. T. Thompson, resigned.

The death has occurred of Mr. George Peat, partner in the firm of Henderson & Co., shipowners, Glasgow. Mr. Peat was 55 years of age, and a native of Glasgow. He joined the firm 30 years ago and has been a partner for the past 15 years. He was a member of the Committee of the British Corporation for the Survey and Registry of Shipping.

The death is announced, at the age of 55 years, of Mr. David Meikle Cumming, principal of D. M. Cumming & Co., shipbuilders, Glasgow. Mr. Cumming was a native of Glasgow, and the son of the founder of the firm, and spent all his professional career in the works. The shipyard on the Forth and Clyde Canal has turned out very many small craft, barges, tugs, &c.

Captain Frank H. Claret, who showed extraordinary heroism and presence of mind on the occasion of his ship being sunk by the enemy in September last, has been awarded the Liverpool Shipwreck and Humane Society's silver medal and framed certificate of thanks, in addition to the presentation made to him by the survivors amongst the crew. Captain Claret commanded a well-known London passenger liner.

The appointment of Mr. C. M. Jenkin Jones as Dock Agent at Middlesbrough is notified by the North-Eastern Railway Company. The post has been vacant since the death of Mr. J. H. Patchett, in October, 1914. Mr. Jenkin Jones is well known in Middlesbrough, as in 1915 he was Chief Clerk to the District Goods Manager there. In August of that year his services were lent to the Ministry of Munitions. He has now, however, been recalled from an important post in London to take up his new appointment.

Mr. Frederick G. Dunlop, of Harland & Wolff, Ltd., Belfast, who has been appointed a member of the Order of the British Empire, has received numerous congratulations upon this distinction. Mr. Dunlop, who is a son of the late Mr. Samuel Dunlop and Mrs. Dunlop, Cregagh Park, entered the service of Harland & Wolff, Ltd., in the drawing office 22 years ago, and has risen to his present responsible position of ship finishing manager. His father was for about 50 years in the service of the same firm, and occupied the important position of cashier. He is a brother of Mr. Harry Dunlop, who served his time at the Island, and was engineer of the *Nimrod* in the second Shackleton expedition, and is now Manager for the African Oil Mills Company, Liverpool; of Mr. Thomas Dunlop, His Majesty's Consul at Turin; of Mr. Samuel Dunlop, Secretary of the North of Ireland Trade Protection Association; and of Mr. Wm. Dunlop, of Harland & Wolff, Ltd.

Mr. Frederick G. Dunlop, M.B.E.,
Ship Finishing Manager, Harland & Wolff, Ltd., Belfast.

Mr. J. W. Sergent, who has for about 18 years been associated with the Allan Line and Canadian Pacific Ocean Services, is retiring from active duties as Chief Superintendent Engineer, but continues his connection as an official of the company in a consultative capacity. Mr. Kenneth MacKenzie, M.E., who was Chief Assistant, has now been appointed Chief Superintendent Engineer of all the company's fleets, with headquarters in Liverpool.

Mr. G. E. Chadwyck-Healey has been appointed Vice-Chairman of the Shipbuilding Council and Assistant to the Controller. Mr. Chadwyck-Healey has been acting as the representative of the Imperial Munitions Board at the Ministry of Munitions during the absence of the official representative of that body in Canada.

The death has occurred in Dublin of Capt. Reginald Deane, Chief Inspector in the Irish Lights Service. He was born in 1862, and received his training on board the cadet ship *Conway*, from which he passed into Devitt & Moore's line of sailing vessels engaged in the Australian trade. He afterwards joined the service of the Commissioners of Irish Lights as second officer in 1882, and was appointed to the steamship *Alert*. His promotion was rapid, and some years later he became the commander of the Commissioners' yacht *Princess Alexandra*. Capt. Deane was ultimately appointed Chief Inspector of the Irish Lights Service, a position he held until his death.

Mr. A. C. Ross, C.B.E., at the St. Peter's works of R. & W. Hawthorn, Leslie & Co., Ltd., Newcastle, on behalf of the officials of the company and the workmen, presented a gold watch and 16 War Certificates to Sergeant Joseph Robson, and a gold chain and pendant for his wife. Sergeant Robson, who holds the Military Medal for meritorious conduct, was discharged two months ago as medically unfit, and has returned to his former employment with the firm. He has six brothers serving with the Forces and their aggregate period of service totals 95 years.

The death has taken place at Southampton of Capt. J. Watson Black, of Penarth. He served his apprenticeship on sailing craft, and afterwards joined the Union-Castle Line. He secured rapid promotion, and commanded some of the largest liners plying between Southampton and South Africa. On the outbreak of war Capt. Black placed his services at the disposal of the Admiralty, and was in command of a large transport at the time of the landing of troops at the Dardanelles. In November, 1915, when transporting Ghurka troops in the Mediterranean, he successfully engaged a German submarine, and his skilful handling of his vessel secured recognition in being presented with a jewelled sword by the Ghurka officers on board. A year later a hospital ship of which he had command was mined in the English Channel; but though the vessel was lost, the whole of the crew, nurses and doctors were saved, there being no patients, as the vessel was bound for France. Capt. Black was in command of the *Gloucester Castle*, which was torpedoed on March 30, 1917, when the whole of the 600 sick cases, together with the medical staff and nurses, were got away safely, but 16 of the crew were lost.

The death has occurred of Sir John Gunn, who died at his residence, St. Mellons, near Cardiff, on January 20. Sir John was in his 81st year, and was in business at Newport from 1855 till 1860, when he came to Cardiff. As long ago as 1872 he was principal promoter of the syndicate which acquired the Mountstuart Dry Docks. Eleven years later, with his brother, the late Mr. Marcus Gunn, he established the firm of J. & M. Gunn, shipowners, coal-exporters, &c., and in 1916 the private company of Sir John Gunn & Co., Ltd., was formed to carry on the business. He was also interested in the Achlibster, the Bilbster, and Chalister Steamship Companies. When the Bute Docks Company was transformed into the Cardiff Railway Company, Sir John was elected a director, and was also on the directorates of the Cardiff Collieries, Ltd., the North British & Mercantile Insurance Co., Ltd., the South Wales Public Wharf, Warehouse & Transit Co., Ltd, the Bristol Channel Employers' Mutual Accident Indemnity Association, Ltd., the Dry Docks & Ship Repairers' Federation, Ltd., and several other concerns. Sir John Gunn was president of the Cardiff Chamber of Commerce in 1886-7 and again in 1896, and in 1891 he was chairman of the Cardiff Shipowners' Association. Sir John was also a Justice of the Peace for the County of Glamorgan and Cardiff, and a knighthood was conferred upon him in 1898.

EXTENSION OF SHIP LICENSING SYSTEM.

It is officially announced that the present system of licensing voyages applies only to steamships over 500 tons gross employed on voyages outside the coasting trade of the United Kingdom. This system will be extended as from February 1, so as to apply to all British ships of whatever size, and whether steamships or sailing ships, which proceed to sea on any voyage from the United Kingdom; and also to all foreign ships which engage in the coasting trade of the United Kingdom.

This extension of the licensing system is necessary in order to secure that the vessels now employed in the coasting trade are used to the maximum advantage in the public interest. It is proposed to establish schedules of maximum freights for particular trades and voyages, particulars of which will be published from time to time.

Applications for licenses in respect of voyages to France with coal, coke, or patent fuel must be made through the Local Committee for the Supply of Coal to France in the district from which the shipment is to be made.

Applications for licenses in respect of voyages other than those mentioned in the preceding paragraph should be made to the Secretary, Ship Licensing Committee, Ministry of Shipping, St. James's Park, S.W.1, from whom the necessary forms of application for all licenses may be obtained.

REORGANISATION OF THE BOARD OF TRADE.

Owing to the greater demands which will undoubtedly be made on the Board of Trade by the business interests of the country after the war an important scheme has been devised which is explained in an official memorandum [Cd. 8912] issued on January 17.

Improved commercial intelligence and the development of oversea trade were provided for by the Joint Department of Overseas Trade (Development and Intelligence) recently set up by the Board of Trade and the Foreign Office, but the widespread demand for a strengthening of the Board of Trade in other directions led to a consultation with an informal committee, consisting of Sir Clarendon Hyde, Sir Algernon Firth, Mr. Mackinder, M.P., and Mr. C. T. Needham, M.P., and as a result the new scheme has been formulated. As it is important that the department should be ready to meet its new responsibilities immediately on the termination of the war, and should be in a position to make adequate preparations to that end, it is proposed to put the scheme into immediate operation, at least in its main outlines.

The work of the Board of Trade will now be organised in two main departments, namely :—

(*a*) The Department of Commerce and Industry, and
(*b*) The Department of Public Services Administration.

The former department will be mainly concerned with the development of trade, with vigilance, with suggestion, with information and with the duty of thinking out and assisting national commercial and industrial policy. The Department of Public Services Administration will be primarily engaged in the exercise of statutory and other administrative functions of a permanent nature with regard to trade and transport now or in the future entrusted to the Board of Trade. It will therefore include the work performed by the present Marine, Railway, Harbour, Companies and Bankruptcy departments.

Each of the two main departments will be in the charge of a Joint Permanent Secretary, but the Permanent Secretary in charge of the Department of Commerce and Industry will rank as senior. One of the assistant secretaries in each main department will be of senior status to the others, with a view to giving direct assistance to the Permanent Secretary in the general work of the department. To determine questions of policy arising in either department or affecting both, the President and the Permanent and Parliamentary Secretaries will meet regularly and will thus constitute an effective working Board.

COMMERCE AND INDUSTRY.

The Department of Commerce and Industry will be concerned with a great variety of matters, and will be subdivided into sections, each in the charge of an officer of assistant secretary rank, but the organisation will be kept as flexible as possible, and the heads of the various sections will be in constant consultation with each other, and so far as possible will be interchangeable. The arrangement of duties and staff will be so planned that the heads of departments may make frequent visits to the chief centres of commerce and industry at home and abroad to widen their knowledge.

The proposed sections of the Department of Commerce and Industry will at the outset be as follows :—

(*a*) *Commercial Relations and Treaties* (the present Commercial Department), including such matters as commercial treaties and agreements, Empire and foreign tariffs and trade regulations, and all other matters within the scope of the Board of Trade which involve representations to or negotiations with Governments within the Empire or foreign Governments relating to the protection and furtherance of British commercial and shipping interests in the Empire and in foreign countries.

(*b*) *Overseas Trade* (*Development and Intelligence*). (Joint Department of Board of Trade and Foreign Office). The functions of the Board of Trade with respect to commercial intelligence and overseas trade development, including the control of the Trade Commissioner Service and relations with the Commercial Attaché and Consular Services, will be exercised through the new joint department of the Board of Trade and Foreign Office. The department will also carry on the work of the late Exhibitions branch of the Board of Trade.

(*c*) *Industries and Manufactures*. A new department dealing with home industries, with special reference to their development and stability, production, and the economic strength of the country generally; with questions of policy connected with trade monopolies and combinations, alien penetration into British industries, and the

promotion of new trades. This section will deal also with matters relating to reconstruction of British industries and trades.

(*d*) *Industrial Property.*—The main part of this department will be constituted by the existing Patent Office, but the department will not only administer the law relating to patents, designs, trade marks, and copyright, but will also be charged with dealing with all branches of industrial property from the point of view of commercial and industrial policy, including both the encouragement of invention and the protection of the commercial public from the abuse of monopoly.

(*e*) *Industrial Power and Transport.*—A new department charged with the consideration of all questions of general policy relating to transport in its commercial aspect, including shipping, canal, and railway rates and facilities, through railway and ocean rates, shipping conferences, &c. It will also deal with questions of policy relating to industrial power, including electricity, gas and water power for industrial purposes, the conservation of fuel, petroleum, &c.

(*f*) *Statistics.*—This department will combine the work of the present Census of Production Office with a centralisation and consolidation of the work of collecting and classifying statistical returns at present carried out by various sections of the Board of Trade. It will deal (*inter alia*) with British and foreign import and export returns, and with the statistics of shipping, railways, wholesale prices, emigration and immigration, output of industrial establishments, &c., and generally will watch the statistical *data* relating to the progress of trade, industry and transport, both at home and abroad.

(*g*) *General Economic Department.*—A new and important section will be created under this title to assist the Permanent Secretary in relation to questions involving economic policy, especially those which, owing to their generality or novelty, extend beyond the sphere of any special department. In the near future questions of this nature, often of the greatest importance, will continually arise and need careful watching and handling, especially in their earlier stages. The new section will supply the necessary organisation for this purpose. It will take over any of the duties of the temporary "Industrial (War Inquiries) Branch" of the Board of Trade which are not transferred to the statistical department.

There will be a strong Advisory Council attached to the Department of Commerce and Industry thoroughly representative of the commercial and manufacturing interests of the country. This Council will be divided into sub-committees meeting at frequent intervals. It is also proposed to constitute representative trade committees for each important group of trades whom the Board of Trade may consult on questions affecting those trades.

PUBLIC SERVICES ADMINISTRATION.

Certain changes and re-groupings will be necessary in the case of the work of the branches of the Board of Trade which fall within the Department of Public Services Administration. The backbone of the work of this department will be, as hitherto, the administration of a number of important statutes, such as the Railway Regulation Acts, the Merchant Shipping Acts, the General Harbour Acts, the Gas and Water Acts, the Electric Lighting Acts, the Companies Acts, the Bankruptcy Act, the Weights and Measures Acts, and many others. In addition to these statutory duties this department will deal with each of the services concerned - railways, shipping, harbours, electric undertakings, &c.- considered as undertakings, while, generally, the Department of Industrial Power and Transport will deal with the questions of policy arising out of the relations of these undertakings to industry and commerce.

HEADS OF DEPARTMENTS.

Joint Permanent Secretaries.—(1) Sir H. Llewellyn Smith, K.C.B.; (2) Sir W. F. Marwood, K.C.B. (7, Whitehall-gardens, S.W.1).

A.—*Department of Commerce and Industry.*

(Sir H. Llewellyn Smith.)

Commercial Relations and Treaties.—H. Fountain, C.B., C.M.G. (Asst. Sec.) (Gwydyr House, Whitehall, S.W.1).

Overseas Trade (Development and Intelligence). (Joint Dept. with Foreign Office).—Sir W. H. Clark, K.C.S.I., C.M.G. (Comptroller General) (73, Basinghall-street, E.C.2).

Industries and Manufactures.—Percy Ashley (Asst. Sec.) (Gwydyr House, Whitehall, S.W.1).

Industrial Property (including Patent Office).—W. Temple Franks, C.B. (Comptroller General of Patents, Designs, and Trade Marks) (25, Southampton-buildings, Chancery-lane, W.C.2).

Industrial Power and Transport.—H. F. Carlill (Asst. Sec.) (Gwydyr House, Whitehall, S.W.1).

Statistics.—A. W. Flux (Asst. Sec.) (68, Victoria-street, S.W.1).

General Economic Department.—S. J. Chapman, C.B.E. (Asst. Sec.) (Gwydyr House, Whitehall, S.W.1).

Board of Trade Journal.—Harcourt Kitchin (Editor) (7, Whitehall-gardens, S.W.1, and 73, Basinghall-street, E.C.2).

B.—*Department of Public Services Administration.*

(Sir W. F. Marwood, K.C.B.)

Marine.—C. Hipwood, C.B. (Asst. Sec.) (7, Whitehall-gardens, S.W.1).

Public Utilities and Harbours.—G. Roper, C.B. (Asst. Sec.) (7, Whitehall-gardens, S.W.1).

Railways.—E. G. Moggridge (Asst. Sec.) (7, Whitehall-gardens, S.W.1).

Companies.—H. A. Payne, C.B. (Comptroller) (55, Whitehall, S.W.1).

Bankruptcy.—J. G. Willis, C.B. (Inspector-General in Bankruptcy) (1, Horse Guards-avenue, S.W.1).

C.—*General.*

Legal.—Sir R. Ellis Cunliffe (Solicitor) (7, Whitehall-gardens, S.W.1).

Finance.*—A. Barnes, I.S.O. (Accountant-General) (7, Whitehall-gardens, S.W.1).

Establishment.*—S. W. Clark (Principal Staff Officer) (7, Whitehall-gardens, S.W.1).

* Responsible to Sir W. F. Marwood, K.C.B.

FROM OUR CORRESPONDENTS.

CLYDE DISTRICT.

(FROM OUR OWN CORRESPONDENT.)

Harbour Workers' Wages.—The Committee on Production have recently had before them an application for an advance of wages from a local trade union, known as the Clyde Harbour Workers' Union, which has since been merged in the National Union of Dock Labourers. The men asked for an increase of 10s. per week and the Committee on Production have decided that they are entitled to a rise of 5s. per week, the advance to take effect from the first full pay in December. The amount awarded is to be taken into account when calculations are made for the payment of overtime, and for night work. The majority of the men affected are in the employment of the Clyde Trust. At the same time the engiemen and cranemen employed at the harbour by the Trust applied for an increase of wages. The matter was referred to arbitration, and the result is that the men are to receive an advance of 5s. per week, the increase to date from the first full pay after January 12.

The Bonus Dispute on the Clyde.—The position of affairs in connection with the dispute on the Clyde regarding the extension of the 12½ per cent. bonus to piece workers as well as to time-workers underwent a considerable improvement at the beginning of this week. A conference was held in Glasgow on Monday between the North-West Engineering Trades Employers' Association and representatives of the Clyde engineers, boilermakers, blacksmiths, tool-makers, machine workers, and brass finishers, to consider the application of the piece-workers in these trades for an equivalent of the 12½ per cent. bonus, which has been granted to time-workers. The employers explained that, in view of the recent Order of the War Cabinet, prohibiting the payment of this bonus to piece-workers, they could not entertain the application, and the conference terminated on the understanding that the different unions would lay their application before the Tribunal which has been constituted under the Munitions of War Act for dealing with all disputes regarding the 12½ per cent. bonus. This Tribunal is composed of the members of the Committee on Production. A considerable number of the men who were idle on the Clyde last week as a result of the non-payment of this bonus to piece workers have re-started work and it is expected that the difficulty which has arisen will be settled very soon.

SCOTTISH EAST COAST DISTRICT.

(FROM OUR OWN CORRESPONDENT.)

Shipping Traffic at Fraserburgh.—The report of traffic at Fraserburgh, which was submitted at a meeting of the Harbour Trustees on Friday shows that the trade of the harbour was well maintained during the latter part of 1917. For December last the revenue of the Trust was £336, an increase of £55 as compared with the corresponding period in 1916. The Trustees have decided to provide facilities at the harbour for the repair of machinery, boilers, &c. Progress is being made with the improvement scheme, which is at present being carried out at Faithlie Basin and Jetty.

Barge Building at Dundee.—The question of providing sites for new shipyards for the building of reinforced concrete vessels at Dundee has not yet been definitely settled. It appears that there are two companies interested in the question. As I mentioned last week, one firm has made application to the Town Council for a site, while another firm has approached Dundee Harbour Board with a similar request. Last week a sub-committee of the Town Council met with a committee of the Harbour Trust for the purpose of discussing the question of providing accommodation for the building of ferro-concrete barges. The Harbour Trust, it is stated, propose to offer Earl Grey Dock for this purpose, and the Town Council are willing to give a temporary site west of the Tay Bridge. Should the firms concerned consider these sites suitable, it is probable that the new industry will be established at Dundee almost immediately.

NORTH-EAST COAST DISTRICT.

(FROM OUR OWN CORRESPONDENT.)

Local Advisory Committee.—Mr. W. J. Noble, chairman of the Cairn Line of Steamships, presided at the first meeting of the newly-constituted Newcastle Local Advisory Committee, whose functions will embrace questions concerned with the absorption of labour, and matters which aim at closer co-operation as between employer and employed. The Ministry of Labour has entrusted the work to the Employment Exchanges, and the Local Advisory Committees will act in conjunction with that department of service, a primary desire being that men who have been serving their country shall have every consideration on return to civil life. The Committee will also be charged with the work of substitution, a most vital and complex problem at this time.

Accommodation for Shipyard Workers.—The expected influx of supplementary labour for Tyne shipyards and munition factories has created two or three problems for the authorities to solve. These include the provision of temporary shelter for the men as they arrive at varying times of the day and night; and thereafter lodgings and food. A fairly large number of private lodgings are available for the newcomers, but most of the landladies decline to be responsible for supplying food, owing to the prevailing shortage. Inquiries were made respecting adaptable buildings for use as hostels in the centre of Newcastle, and, doubtless, suitable accommodation will be ultimately secured. The circumstances go to show that it is one thing to transfer labour from one district to another, and a much more difficult matter to house and feed it after it has arrived.

Settlement of Differences.—Draft proposals for the avoidance of disputes and settlement of differences between the Shipbuilding Employers' Federation and the Boilermakers' Society are contained in the January report of the latter trade union. Differences as to wages and hours or conditions of employment are to be dealt with by a method of procedure commencing with the foremen and men concerned, who are to endeavour to agree upon a settlement either with or without the society's official delegate. If a settlement is not made, then a joint committee takes up the question, and should it be unable to adjust matters, the next stage is a conference of representatives of the Federation and of the Society, with a chairman appointed by the Chief Industrial Commissioner. If there be still no settlement, the chairman is empowered to issue a statement recommending a settlement which may be open to either side to accept. In the event of non-acceptance either side is free to take what course it may think expedient in the circumstances.

Complaint against Government Departments.—Grumbling at the way Government Departments handle industrial questions is now almost universal. Further evidence of this is afforded in the current number of the Journal of the Iron and Steel Trades Confederation. Therein it is stated that for some time there has been a strong and growing feeling of dissatisfaction at the manner in which matters affecting workpeople in the iron and steel trades were being dealt with by different Departments of the Government, and by the committees appointed by such Departments, and which were called upon to give decisions on wages and other questions. It is asserted that "a large number of the decisions given, and the general attitude displayed by representatives of the Departments, failed entirely to take into account the special arrangements, customs and conditions existing in the industry, consequently we were being met more and more with the argument that the fact of the iron and steel trades having avoided any serious dislocation of trade during the war was being exploited, and that the only way to impress upon the Government the necessity of recognising the legitimate claims of the iron and steel industry was to adopt the more clamorous methods of neighbouring trades." As is well known, the 12½ per cent. bonus led to great confusion, and this was an added grievance to the iron and steel workers, who, with numerous other workers who have recently made their voices heard, were left out of the original award to the engineering, foundry and shipbuilding trades.

MERSEY DISTRICT.

(FROM OUR OWN CORRESPONDENT.)

Shipbrokers' Association.—At a meeting held at this port last week it was decided to form the Liverpool Shipbrokers' Association as a section of the Liverpool Chamber of Commerce, to act in conjunction with the London Institute of Shipbrokers in the steps they are taking to secure recognition from the Government of the shipbroking profession, and generally the furthering of their interests and welfare. Cassady, Farrer, Mansell, Marwood, Tilby (junr.), and Webster, with Mr. A. Coker (junr.) as acting Secretary, were elected as a committee to carry the proposal into effect.

Meeting of Liverpool Underwriters' Association.—The 116th annual meeting of the members of the Liverpool Underwriters' Association was held on Tuesday this week, presided over by Mr. T. H. Harper. The annual report presented by Mr. T. A. Bellew, Secretary, reviewed the subjects that had engaged the attention of the Committee during the past year, and principal among them was the destruction of merchant shipping by submarine warfare. There is little need, the report stated, to remind maritime members of the Association that the phrase "Freedom of the Seas," as used by the Germans, has ceased to have any of its legitimate meanings. They interpret it to mean German domination of the seas. Count Reventlow, speaking at a public meeting in Berlin in March on this subject, said: "What we understand to-day by this doctrine is that Germany should possess such maritime territories and such naval bases that at the outbreak of war we should be able, with our navy ready, reasonably to guarantee ourselves the command of the seas. We want such a jumping-off place for our navy, as would give us a fair chance of dominating the seas, and of being free of the seas during a war." The Committee regard with much concern the submarine menace, which they feel will not be neutralised until this country's output of ships materially surpasses our losses.

In regard to war-risk insurance on shipping, the report says that under an arrangement which came into operation on August 19, the Government, instead of re-insuring only 80 per cent. of the Government valuation of hulls and machinery, accepted liability for the whole agreed value, thereby relieving owners from liability for "calls" from the mutual clubs, for losses subsequent to August 19 in respect of King's enemy risks.

It is, moreover, satisfactory to note that after much correspondence, an agreement has been come to between the Government and underwriters under which a system of arbitration has been created to determine the apportionment of liability in the case of missing ships, as between war risk and ordinary marine insurance policies. This mode of dealing with the matter will obviate the delays such as have hitherto occurred with the settlement of claims, for ships and cargoes sunk, owing to the absence of direct evidence as to whether the vessels were sunk through war or marine perils.

Dealing with the Government control of trade, it is observed that one of the most gratifying things connected with the putting of war measures into effect was the patriotic zeal with which business men throughout the kingdom responded to Government demands. It is disappointing, therefore, to record that widespread dissatisfaction has sprung up in regard to the manner in which Government control is in many instances administered in connection with the

internal production and distribution of the country as well as with its exports and import business. The Committee cannot help thinking that the dissatisfaction referred to is, in the main, due to the fact that Government departments have not sufficiently availed themselves of the practical experience of business men throughout the country which would have been willingly afforded had they been applied to.

SOUTH WALES DISTRICT.

(FROM OUR OWN CORRESPONDENT.)

After-War Time Charters.—An idea of the opinions held in some quarters in regard to the position of time charterers under the conditions which will prevail after the war is given in a statement, made on the Cardiff Exchange on Thursday, that an owner had time-chartered a 1,200 to 1,500-ton steamer for five years at 30s. per ton. d.w., delivery to take place six months after the war. Time charter rates at present are considerably lower than they were a year or more ago. A typical example is given of the decrease in regard to a 600-ton vessel which has now to be satisfied with a rate of 52s. 6d. for a French port, as compared with an old rate of 95s.

Shipbreakers' Increased Wages.—An application having been made by a body of 86 shipbreakers, employed by Thomas W. Ward. Ltd., Briton Ferry, for a 25 per cent. advance, the matter was referred to arbitration. Just before the arbitration was heard they were granted by the Government 5s. per week. Mr. W. H. Stoker. K.C., the arbitrator, in his award gives them 2s. 3d. per week (in addition to the 5s.), and all their war bonuses are to be converted into war wages. Owing to the length of time the men have been waiting for the award, he gave each employee over 18 years of age a lump sum of £1 10s.

Swansea Harbour Trust Meeting.—The Harbour Trustees at their meeting passed a resolution accepting the resignation of Sir Griffith Thomas as chairman, and also recorded an expression of their sincere appreciation of the valuable services he has rendered to the Trust since his election in 1891, and particularly during the 20 years he occupied the position of chairman. It was owing to his efforts in connection with the King's Dock project that Swansea possessed such up-to-date efficiency. Mr. Roger Beck, who has been elected chairman until the next annual meeting, said he realised the great responsibility imposed on the chairman of the Trust. He would suggest that that position in future should be decided by ballot, and not by open vote. An election of a proprietary trustee in the place of Sir Griffith Thomas will take place on January 29. The Pilotage Committee recommended a schedule of increases in the harbour pilotage rates which will become operative after the sanction of the Board of Trade has been obtained. The Shipping Section of the Chamber of Commerce has approved of the increases recommended.

Shipbuilding Schemes.—The question of erecting a bridge across the river at Briton Ferry, thereby giving access to the Jersey marine area, was brought before the Neath District Council by Mr. G. C. Williams, the promoter of the scheme. He said that a very high opinion was expressed by the Admiralty deputation, on the occasion of their recent tour of sites suitable for shipbuilding at different places in the Bristol Channel, of the Jersey Marine site. Owing to the absence of direct access to this area two ship-repairing yards had been lost to the district. It was stated that steps were being taken to get powers by Act of Parliament, and the Council decided to defer action until the Bill was before them.

The idea of providing facilities for the construction of concrete ships at Portheawl was again brought before a meeting of the Council, when the engineer of a syndicate interested in the matter wrote asking for particulars regarding the cost of wharfage and dues. It is stated that the new company has obtained a lease from the dockowners of a slip which had some years ago been used for a similar purpose. The Council decided to do all in their power to help the promoters of the project.

BELFAST DISTRICT.

(FROM OUR OWN CORRESPONDENT.)

A Hitch at Londonderry.—Owing to the unreasonable attitude taken up by a part of Londonderry Corporation regarding the Bill which that body is promoting in Parliament to develop the city's electric power, the North of Ireland Shipbuilding Company has directed the contractors to suspend the work they have on hand in connection with the development of the yard and the erection of 600 workers' houses. In his telegram to the contractors, Mr. Trevise Clarke, the managing director of the company, said: "The action of members of the Derry Corporation will, if successful, completely swamp our attempts to establish for a third time the shipbuilding industry in Londonderry. Please immediately suspend all building operations and development work at shipyard, also Farm and Penybon Estates, until further orders. In the meantime my Board must consider what action they will take in connection with any further capital outlay. Please acknowledge this telegram to Wallsend." The men have now been out over a week.

Establishment of New Shipyard.—Lord Pirrie paid a visit to the Belfast yards and works last week. Preparations have been made for the establishment of a new yard by the firm on the east side of the Musgrave Channel where they have just leased a large tract of ground from the Harbour Commissioners. This yard will have six building berths for a start, and will be further developed as soon as housing accommodation can be provided. The City Corporation has a fine chance now to prepare a big housing scheme, and in view of the national importance of the work it is felt that facilities should be given by the Government for the release of building material. The new yard is on a tract of land hitherto absolutely undeveloped, but not far from the firm's works. Their existing north and south yards cannot be further extended as every foot of ground is occupied. There is a very optimistic feeling as to the future of the industry on the Logan, and when the developments which are in contemplation are completed the building capacity of the city will probably be doubled.

THE FREIGHT MARKETS.

(FROM OUR OWN CORRESPONDENTS.)

London. Chartering business on the Baltic exchange has witnessed no change in conditions during the past week. Rates remain very high in all instances and there is a sustained demand for available tonnage. From the River Plate 200s. offers to the United Kingdom, and 205s. to France. At the ports of the North American Atlantic seaboard there is a great demand for tonnage on net form of charter, for which the ruling rates are 230s. to the U.K., 260s. to France, and 360s. to Italy, 30s. extra being payable for Gulf loading. For heavy grain 50s. offers to the U.K., 56s. 3d. to 57s. 6d. to France, and 75s. to Italy. There is little doing with coal cargoes Virginia to Plate, for which about 117s. 6d. would be paid. Nitrate business offers at 185s. to the U.K. The Eastern market maintains its firmness. Karachi continues to indicate 250s. on scale basis to the U.K. and Bombay on d.w., 275s. to the U.K., and 400s. Mediterranean. From the Madras Coast 550s. would be paid for kernels to Marseilles. The rice ports offer 500s. Saigon or Burmah to the U.K. or France. In the Mediterranean section of the market chartering goes on steadily from the ore and phosphate ports at rates which are represented by 45s. Huelva to the Mersey, 60s. Huelva to the East Coast U.K., for pyrites, 50 frs. Bilbao to Boulogne, 80 frs. Sfax to Bordeaux, and 70s. Sfax to British Channel, 50s. Bougie to the Clyde, and 65s. Tums for the same destination. Salt cargoes can be worked from Torrevieja to Calcutta at 52s. 6d. In the Bay trade, Bordeaux to the Bristol Channel has been fixed at 17s.

Glasgow.—There has been little change to record in the condition of affairs on the Glasgow market since our last report. There has been little tonnage to dispose of and high rates were obtained for any boat available for a neutral destination. Early in the week it was reported that a sailing ship had been fixed from Australia to the Atlantic States at 100s., May-June. Other fixtures were: Bordeaux to the Bristol Channel, 17s. prompt; steamer on time charter, general trade, 45s., six months; time charter, States and West Coast South America, 40s., delivery New York, re-delivery North of Hatteras; time charter, Virginia to River Plate, about 82s. 6d. coal; and Glasgow to Barcelona, 2,000, 400s.

Newcastle-on-Tyne. Business in the local coal tonnage chartering market has been rather more active during the past week, although the dearth of tonnage is still so great as to prevent even one tithe of the possible fixtures being arranged. Whilst some of the collieries have been fairly well situated, so far as the provision of cargo space is concerned, very many pits have been

almost wholly without transport facilities and have had to lie idle or to work only short time. It was reasonably hoped that the advent of the present week would witness the influx of a larger amount of tonnage, but this expectation has not been borne out by events. Orders for all directions are exceedingly numerous, Allies and neutrals alike crying out for more fuel, but the amount of shipping on offer is lamentably small and quite inadequate to meet the necessities of the case. In the coasting market, London has been twice arranged for, for comparatively small steamers, at 21s. For Sweden, Gothenburg has been done for a 1,650-ton steamer at 185 kr. and Stockholm for a 2,600-ton steamer at 200 kr., rates which show increases on last week's figures of 2½ kr. and from 2½ kr. to 5 kr., respectively. Coaling station business is represented by two fixtures to Gibraltar at 100s.; nothing has been done for Port Said. Spanish business is being pressed upon the market at about 180s. to Bilbao or Santander and fully 300s. to Barcelona—probably in view of the very high rates now ruling at other British ports, much more than 300s. will need to be paid—but no chartering has resulted. For Portuguese ports, rates remain at 115s. to Lisbon and 125s. to Oporto.

Liverpool.—Outward freights continue quiet and the position in regard to tonnage supply has in no respect improved. Very tempting offers are still held out to free ships, especially to Spain where recently 400s. was paid for coal, Clyde to Barcelona. Inquiries are numerous, and a boat is wanted Mersey to Lisbon at 90s. control rate. The great disparity in the rates for controlled and free ships is shown in the two following fixtures: Swansea to Bordeaux, neutral boat, 2,500 d.w. made 60s., while an Allied boat of 2,100 tons d.w., Swansea to Rouen, got 24s. 6d. Time chartering is quiet but firm; 35s. has again been done for one round trip States to West Indies, while in the general trades the rate is around 45s. for six months. In the homeward section, North America lacks tonnage, and quiet conditions prevail, though there is plenty of inquiry especially for net charters on basis of 230s. New York to Liverpool, 260s. to French Atlantic, and up to 400s. from the Gulf of Italy. Grain rates are firm around 50s. to the United Kingdom, 57s. 6d. to France, and 77s. 6d. to Italy, but conditions are dull owing to difficulty in securing tonnage. Eastern freights are strong, but tonnage is as scarce as ever. Saigon is offering 600s. to France, but free tonnage does not respond. River Plate slow and values nominal, while nitrate ports indicate 185s. to United Kingdom, and 215s. to Mediterranean. Bordeaux to British Channel for boat 1,500 tons d.w. paid 17s.

Cardiff and Swansea. Exceedingly quiet conditions prevailed in the outward freight markets. Tonnage has not been coming forward as freely as was anticipated, the bad weather conditions have delayed stemmed vessels, and, in addition to this factor, loading operations were somewhat impeded by the recent snowstorms. These circumstances have tended to make a quiet market into an almost stagnant market. Numerous orders have been in circulation, but owing to the conditions prevailing the bulk of these has not been completed. The only business disclosed was for limitation ports, for which directions rates were easily upheld up to the maximum. Rates for neutral ports are exceedingly strong, especially for Spain. Barcelona was reported worth about 440s., and Valencia at a similar figure. A fixture was reported for Gibraltar at the old rate of 100s. The Swansea market has lacked animation. A good demand prevailed for tonnage, but actual chartering operations were on the quiet side. The only transactions disclosed were: Caen at 46s. 6d., 47s. 6d., and 48s. (neutral); Rouen 24s. 6d. (allied), and Bordeaux 60s. (neutral).

Hull. The market has a firm tone this week, and though tonnage is everywhere scarce, a fairly active business is moving for North French destinations. The West Italian market is firm, and a fairly active inquiry is felt, though the tonnage paucity adversely affects this market. The Scandinavian market is full of inquiry, but traffic is at present quiet. The Dutch trade is also quiet.

THE COAL MARKETS.

(From Our Own Correspondent.)

During the last week or two there has been a considerable amount of depression in the coal trade, that is, so far as the export trade is concerned. This depression has been caused mainly by the bad weather, which has held up shipping and consequently dislocated traffic on the railways. As a result many of the pits supplying the ports of South Wales are very badly placed and are finding it increasingly difficult to keep going without piling up stocks to an unwarrantable extent.

The bunker trade has also been very quiet. On the North-East Coast there has been little or no inquiry for bunker fuel, and large quantities are available at normal prices, which run from 24s. to 27s. 6d. Special bunkers for export are, however, in good request still, and realise 30s. without difficulty.

In South Wales the bunker trade is almost lifeless, and small steams for bunkers can be purchased for 18s., though the better classes are held for higher values up to 21s. 6d.

Export business, so far as the North-East Coast is concerned, has been practically dead lately, owing to the transport difficulties. In the absence of regular arrivals of shipping, the railways have been put in an awkward position with regard to wagons, and the collieries have been unable to find an outlet for their production. In some cases, though these are rare, collieries are pretty well placed; the majority, however, are in an unpleasant position and would be glad to get rid of their surplus stocks.

Fortunately the home demand keeps good, in fact this is on the increase, and while little new business has been reported a considerable and increasing amount of coal continues to be sent inland. Thus prices are maintained with some degree of firmness. The position of best steam coal is not unfavourable, though inferior qualities and smalls are not in request. The house coal trade is very good, and gas coal is moving off well.

Approximate quotations are for best Blyth steams 30s. to 32s. 6d., and smalls 18s. 6d. to 20s. 6d.; Tyne primes 29s. 6d. to 32s., and smalls 25s. to 27s. 6d.; second steams 25s. 6d. to 29s. 6d., and smalls 18s. 6d. to 20s. 6d; unscreened steams 24s. to 25s.; North Northumberland steams 28s. and smalls 20s.; smithies 25s. to 30s.; nuts 32s. 6d. to 33s. 6d.; Durham gas coal 23s. 6d. to 30s.; coking coal 17s. to 25s.; house coal 20s. to 22s. 6d.; bunker coal 24s. to 27s. 6d., special bunkers 30s.; foundry coke 42s. 6d. to 45s.; and blast furnace coke 35s. 6d.

The South Wales coal trade has been very much interfered with by the inclement weather. Arrivals of shipping have been few and work at the docks has been badly dislocated. The transport difficulties have been so great that the whole of the working of the coalfields has been thrown out of gear, and many collieries have been on the point of closing down, while practically the whole have been working short time. In fact a proposal which is receiving serious consideration in South Wales is to work only five days a week, though the adoption of this plan is attended by so many difficulties that it is not likely to come into force. There is no new business passing, and the huge stocks of coal on every hand are not being appreciably diminished. The tone of the market generally is weak.

Prices, subject to the addition of 2s. 6d. per ton war wage increase, are, for best steams 33s., seconds 30s. 9d. to 31s. 6d.; ordinaries 30s.; drys 28s. 6d. to 30s.; small steams 18s. to 22s. 6d.; best large black veins 30s.; Western valleys 29s.; Eastern valleys 29s.; nuts 28s. 6d. to 30s.; duff 14s. to 18s.; house coal 30s. 9d. to 33s.; No. 3 Rhonddas, large, 30s. 9d., and smalls 26s.; No. 2 Rhonddas, large 27s., and small 17s. to 19s.; through and through coal 22s. to 23s. 6d.; gas coal 21s. to 25s.; and patent fuel 30s.

The position of the Hull coal market remains unchanged, except that there is rather more pressure for coal for inland use. The stormy weather has interfered with the export trade to France, but beyond this the market has suffered no great inconvenience. A good deal of coal continues to be sent from Hull to the Southern Counties.

Prices are for large steams 30s. to 35s.; Hartley's 27s. 6d.; gas coal 25s. to 26s.; house coal 27s. 6d.; nuts 23s. to 25s.; and smalls 20s. to 21s.

In the Scottish coal trade there is no animation and little change, though the authorities have lately been purchasing a good deal of steam fuel. Though the export trade is nothing to boast about, the home demand is very strong, and practically the whole of the output of the Scottish collieries is being disposed of without difficulty.

Quotations, subject to the addition of 2s. 6d. per ton war wage increase, are for splints 28s. to 30s.; Hartley's 29s.; ells 26s. to 28s.; screened navigations 28s. to 30s.; unscreened navigations 25s. 6d. to 29s.; steam coal 27s. 6d.; and nuts 22s. to 25s.

In the Midland coal trade an increasing home demand is apparent, and this has been particularly noticeable in connection with the house coal trade, which has had a not inconsiderable impetus from the colder weather. All classes of steam fuel are in demand, and thus there is a greater call for fuel than is met by the current supply. Prices, in the circumstances, keep very firm, and of surplus coal there is practically none.

The London coal market has also been characterised by a brisk demand for house coal. All coal which comes on the market is promptly taken up and for some time past consumption has outpaced supply. The amount of railborne coal coming forward is, however, fairly good, and seaborne supplies have been satisfactory.

COMPANY MEETINGS.

Chadburn's (Ship) Telegraph Company, Ltd.—The 19th annual meeting was held at Liverpool on January 15. The Chairman (Mr. William Chadburn), in moving the adoption of the report and accounts for the year ended March 31, 1917, explained why the meeting was held at a so much later date than usual. The delay was due to the enormous amount of work which the preparing and auditing of the accounts had involved in order to meet the requirements of the Government. In regard to the profit and loss account, the shareholders would probably be struck by the large amount of the gross profit resulting from the year's trading—namely, £56,502—and also by the amount which appeared under the heading of "Income tax, schedule D, excess profits duty, munitions levy and other contingencies"—namely, £24,878. The gross profit was some £17,000 greater than the gross profit of the previous year, but it would be seen that the net profit brought into the balance sheet was only £10,061, which was very little more than the net profit of the previous year—namely, £9,284. It was not within his province, nor was it his intention, to criticise at length the provisions of the various Acts of Parliament to which the company was now subject, but he could not help feeling that they were suffering to the maximum from a system of taxation which, while rightly eliminating all question of war profits, nevertheless would penalise the company in the days after the war. Sums which in previous years were put by for depreciation had this year to be used to bring the divisible profit up to the figure shown in the balance sheet, and though the directors had endeavoured to point out the danger of this, he regretted to state that, judging by the attitude of the Government financial advisers since 1914, there did not seem to be the slightest attempt to consider any question other than that of demanding to the utmost the amount procurable for taxation under the Acts for each year in question and leaving the future to look after itself. Turning to the actual work accomplished during the year under review, he regretted he was not permitted to give either facts or figures. They had been and were still working to the utmost capacity to meet the requirements of the Admiralty, and he could only now express the hope that the time of peace would soon come, when the directors could give a fuller account of their work during the war. Mr. R. R. Bevis seconded the motion, which was carried.

COMPANY REPORTS AND DIVIDENDS.

Boddy Life-Saving Appliances (1914), Ltd.—The directors have declared an interim dividend of 2½ per cent.

Indemnity Mutual Marine Assurance Company, Ltd.—The directors have resolved to recommend to the proprietors, at the annual general meeting in February, a dividend for the half-year to December 31, 1917, of 10s. per share and a bonus of 6s. per share.

Germanischer Lloyd, Berlin.—Including a balance of £155 brought forward (£810 last year), the net profit for 1916-17 is £4,610, compared with £1,135 for 1915-16. Last year 5 per cent. dividend was paid on the share capital of £39,200. The allocation of this year's profits is not yet announced.

Maindy Shipping Company, Ltd.—The managers (Jenkins, Richards & Evans, Ltd., of Merthyr House, Cardiff) have declared a dividend of 10 per cent. per annum, less income tax, for the quarter ended December 31 last, payable on February 2 to all shareholders on the books of the company on January 24.

Fairfield Shipbuilding & Engineering Company, Ltd.—The directors have notified that the warrants for interest on the 4½ per cent. first mortgage debenture stock, 5 per cent. "A" mortgage debenture stock, and the 6 per cent. cumulative preference shares for the half-year ended December 31, 1917, have been posted.

Ardrossan Harbour Company. The report of the directors for the half-year ended November 30, 1917, states that it is proposed to pay a dividend of 4½ per cent. per annum for the half-year on the preference shares, and 4¼ per cent. for the year ended November 30 on the ordinary shares, to credit contingency account with £1,700, and to carry forward the balance of £76 to the next half-year's account.

Sea Insurance Company, Ltd.—The report, together with the statement of accounts to December 31, 1917, states that the premiums received during the year, less returns and re-insurances, amount to £2,285,626, the claims settled on account of 1917 being £1,308,100. The underwriting account for 1916 has been closed by transferring £65,000 to underwriting suspense account to meet unsettled claims, leaving, after payment of expenses, a profit of £48,257. This sum, after payment of income tax, leaves a net profit of £27,334. The interest received during 1916 was £44,991, making a total profit of £72,325. The profit and loss account shows a credit balance of £168,406. From this sum the directors have written off £40,000 to provide for the depreciation in the market value of the securities. An interim dividend of 10s. per share (subject to income tax) was paid on May 30 last. The directors now recommend the payment, on or after January 30, of a further dividend (subject to tax) of 10s. per share, making a total distribution for the year of 20s. per share, carrying forward £109,656.

Bathampton Steam Navigation Company, Ltd.—The report states that for the period of 14 months ended October 31, 1917, the net profit, after providing for taxation, amounts to £8,319, out of which dividends of 5 per cent. free of income tax (equal to 6⅔ per cent.) have been paid. The balance remaining does not justify any further distribution for the year. The company's vessels are now requisitioned, and have been so for the greater part of the period covered by the accounts, and as is now generally known, the rate fixed for steamers on requisition is so low that it is impossible to work at a profit. The small profit made this year by the company was all made by one steamer when free for one voyage, and against this has been put the loss made by the two vessels when requisitioned. With regard to the new steamers, although contracted for in 1915, the Government have decided not to allow, for the present, private owners to build any further tonnage, but to employ the country's money for that purpose, although most owners are prepared to put down their own money for the purpose of increasing their fleets. The profits for 1916 were £31,909, and the distribution was 30 per cent.

Field Line (Cardiff), Ltd.—The directors, in submitting the fifteenth annual report and statement of accounts for the year ending November 30, 1917, state that the accounts show a profit, after providing for excess profits duty and income-tax, of £15,454, and after providing for interest on outstanding first and second debentures, repairs and directors' fees, there remains a credit balance of £7,231, to which is to be added balance brought forward from last account £3,190, making £10,421, less interim dividend at the rate of 10 per cent. per annum, paid June 9, 1917, £2,717, leaving at disposal £7,704. The directors recommend a further distribution at the same rate, and bonus of 2½ per cent. free of income tax, which will absorb the sum of £4,076, leaving a balance of £3,628 to be carried forward to the next account. During the year first debentures to the amount of £5,400, and second debentures to the amount of £200 have been redeemed and cancelled. The profits and dividends for the past five years have been as follows:

Year ended November 30.	Profits. £	Dividend. Per cent.
1913	23,421	10
1914	8,947	10
1915	70,363	25
1916	39,929*	25
1917	7,231*	12½

* After providing for excess profits duty, income-tax, interest, &c.

COMPANY REGISTRATIONS.

Multilocular Shipbuilding Company, Ltd.—Capital, £15,000, in £1 shares. Objects, to carry on the business of ship, barge, tug and pontoon builders. Signatories:—

W. P. Jobson, 12, Carlton Terrace, London.
J. G. Eglands, 97, Strathyre Avenue, Norbury.

The first directors are: G. Earle and Jas. Earle. Solicitor: F. W. Darch, 20, Eastcheap, E.C. Private company.

Scottish Concrete Ship Company, Ltd.—Capital, £10,000, in £1 shares. Objects, to carry on the business of builders and repairers of and dealers in ships, submarines, boats, barges, &c. Signatories:—

Peter McBride, 13, Chapel Lane, Port Glasgow, 250 shares.
Jas. Gray, 57, Harriet Street, Pollokshaws, 250 shares.

The first directors are: P. McBride, J. Gray, J. Livingstone and K. Ferguson. Registered office: Battery Park, Greenock. Private company.

Gooldum Shipping Co., Ltd.—Capital, £30,000, in £1 shares (15,000 preference). Objects, to acquire, own and work steam, sailing and other ships and vessels, also to carry on the business of shipbuilders, marine engine builders, boiler makers, ship repairers, dry dock owners, ship and insurance brokers, underwriters, freight contractors, &c. Agreement with Pile & Co., Ltd. Signatories :—

C. H. Pile, 34, Great St. Helens, E.C., shipowner.
Mrs. J. Pile, 34, Great St. Helens, E.C.

Pile & Co., Ltd, are the first managers and ships' husbands. Private company.

Oberon Shipping Company, Ltd.—Capital, £7,000, in £1 shares. Objects : Shipbuilders, shipowners, ship insurance and loading brokers, shipping, passenger and tourist agents, carriers by land and water, marine surveyors and valuers, &c. Signatories :

L. K. Osmond, The Crofts, Grimsby, chemical manufacturer.
E. Blow, Oberon Wharf, Queen Street, Hull, shipowner.

First directors are : L. K. Osmond and E. Blow. Registered office : Oberon Wharf, Queen Street, Hull. Private company.

Stranton Drifters, Ltd.—Capital, £25,000, in £1 shares. Objects : Drifter, trawler, tug, ship and barge owners, shippers, lightermen, carriers by land and water, ice manufacturers and merchants, refrigerators, &c. Signatories :—

R. H. Davison, 7, Albion Terrace, Hartlepool, trawler owner.
W. S. Button, Ravenscraig, Norton-on-Tees, fish merchant.
T. H. Peverell, Albion Terrace, Hartlepool, trawler owner.

First directors are : R. H. Davison, W. S. Button and T. H. Peverell. Registered office : Fish Quay, Hartlepool. Private company.

Abel Barges, Ltd.—Capital, £1,000, in £1 shares. Objects, to enter into an agreement with F. Abel, and to carry on the business of ship and tug owners, carriers by land and water, coal and timber merchants, ballast and dunnage dealers, forwarding agents, wharfingers, &c. Signatories :

F. Abel, The Shanty, Frodsham, barge manager.
Miss C. Abel, Ingleside, Runcorn.

The first directors are F. Abel and Miss C. Abel. Registered office : 9, Canadian Buildings, 7-9, James Street, Liverpool. Private company.

New Cransley Iron & Steel Company, Ltd.—Capital, £100,000, in £1 shares. Objects : To take over the business of ironmasters and steel makers carried on by a company of the same name (in liquidation) ; also to carry on the business of engineers, stampers, piercers, metallurgists, wharfingers, shipbuilders, shipowners, &c. Signatories :

E. C. Keay, 28, Westfield Road, Edgbaston, Birmingham, manufacturer.
A. T. Keen, Harborne Park, Harborne, Birmingham, manufacturer.

The first directors are : E. C. Keay, A. T. Keen and J. F. Pearson. Solicitors : Pinsent & Co., 6, Bennett's Hill, Birmingham.

Inland Transport & Marine Insurance Company, Ltd.—Capital, £50,000, in 49,500 ordinary shares of £1 each and 10,000 founders' shares of 1s. each. Objects, to carry on the business of marine insurance in all its branches, to insure parcels (whether despatched by post, rail, sea or otherwise) and property of all kinds for transit by land or water, &c. Signatories :—

C. Parkhouse, 24, Bennetts Hill, Birmingham, solicitor.
A. G. Hudson, 17, Augusta Road, Moseley, solicitor's clerk.

The first directors are to be appointed by the subscribers. Registered office : 97, Exchange Buildings, New Street, Birmingham. Private company.

Richmond & Wordsworth, Ltd.—Capital, £100, in £1 shares. Objects : to acquire any inventions for smelting, refining, converting, manufacturing and dealing with alloys, &c., also to carry on the business of furnace owners, constructors of ships, yachts and vessels, &c. Signatories :—

J. H. Sayles, Oak Villas, Oxford Street, Sheffield, gentleman.
W. H. Gray, Kildare, Emmerdale Road, Richmond, engineer.
T. E. England, 29, Selona Street, Witton, Blackburn, engineer.

The first directors are : J. H. Sayles, W. H. Gray and T. E. England. Registered office : 38, Oxford Street, Sheffield. Private company.

H. R. Ashby & Co., Ltd.—Capital, £5,000, in £1 shares. Objects : Coal exporters, coal and colliery agents, dealers in coal and its products, colliery proprietors, wagon and ship owners, &c. Signatories :—

H. R. Ashby, Riveiia, Mayfield Road, Bridlington, Yorks, coal exporter.
H. Eaband, 244, Marlborough Avenue, Hull, coal exporter.

Permanent governing director : H. R. Ashby. Registered office, Welton Chambers, Jameson Street, Hull. Private company.

QUESTIONS IN PARLIAMENT.

Shipping Losses.

Mr. Houston on January 16 asked the Secretary to the Admiralty the total value of all ships and cargoes of all descriptions sunk by enemy submarine and mine from August 4, 1914, to the latest date on which he had particulars, and that date.

Dr. Macnamara : We are not in a position to give this information, nor is it considered in the public interest that it should be given.

Torpedoed Steamers.

Mr. Houston on January 16 asked the Secretary to the Admiralty whether the Admiralty informed the Parliamentary Secretary to the Shipping Controller that a certain steamer torpedoed on Christmas Day while crossing from a French Channel port to an English Channel port, was torpedoed while under Admiralty protection or escort ?

Dr. Macnamara : It is regretted that the information given to the Parliamentary Secretary to the Shipping Controller was incorrect. The vessel in question was not being escorted at the time she was torpedoed.

Mr. Houston : Who was responsible at that date for giving the Parliamentary Secretary to the Shipping Controller this incorrect information with such disastrous results to his reputation ?

Dr. Macnamara : The information came by telephone, and we accept the responsibility, and regret that incorrect information was given.

Mr. Houston asked whether the refrigerated steamer torpedoed and sunk on passage from a French Channel port to a British port was, at the time she was torpedoed, escorted by a naval armed vessel ; and whether the captain asked for an escort or protection before leaving the French port.

Dr. Macnamara : The answer to the first part of the question is in the negative. The answer to the second part is that no application was made for an escort either to the French authorities on the other side or to the naval authorities on this side. If my hon. Friend understands that an escort was asked for, perhaps he will give me his authority, privately. He is aware of course, that the vessel was defensively armed.

New Cargo Steamer Lost.

Answering on January 21, Sir Fortescue Flannery, who asked whether his attention had been called to the loss by enemy action of a new cargo steamer of 9,300 tons deadweight on December 13 last, upon her first voyage, Dr. Macnamara replied in the affirmative. The allegation that the cargo ship in question was ordered by the Admiralty to proceed alone to overtake a convoy which had started some time previously was not correct.

Repair of Damaged Vessels.

Mr. Houston also asked whether the steamer torpedoed on Christmas Day, while crossing from a French Channel port to an English Channel port, and receiving such serious damage that over six months will be occupied in repairing, had been reported or returned in the published list of vessels unsuccessfully attacked ; and, if so, on what date was it so officially reported.

Dr. Macnamara : Vessels damaged by submarine or mined are not included in any published list unless and until they become a total loss, when they are included in the published list of the week in which this information comes to hand, with a reference to the week in which originally attacked. I ought perhaps to add that we do not apprehend that this particular vessel will take six months to repair. I think it desirable to say further that of the total number of British vessels damaged by enemy action for the ten months January to October, 1917, inclusive, it has been found impossible to salve four only. Of the rest, the repair of more than half has been actually completed.

Mr. Houston : What is the use of returning in the official list the number of vessels which are unsuccessfully attacked by enemy submarines, when in a case like this, in which the ship is out of commission for more than six months, and in another case which I know the ship is out of commission for twelve months, no notice is taken ? May I correct the right hon. gentleman in regard to the time which vessels take in repairing ? Is he aware that the Director of Shipping has said that the repairs to this ship will occupy six months ?

Dr. Macnamara : I consulted the Department this morning, and they say that it will not take six months.

Mr. Houston : Who said that ?

Dr. Macnamara : The officer responsible. With regard to the other point, the vessels unsuccessfully attacked are not injured

in any way. The vessels that have been attacked and damaged do not appear in the paper unless and until they become a total loss.

Mr. Houston: Is it not more important in the public interest to know the number of vessels damaged than the number undamaged, which is merely eye-wash? Is not the right hon. Gentleman aware that the temporary repairs to this steamer at Portsmouth occupied a month, and that the permanent repairs, according to the Director of Shipping, will occupy six months?

Dr. Macnamara: According to such information as I have, the expectation is that it will not take six months to repair.

Mr. Houston: Well, we will wait and see.

Submarine Attack on a Convoy.

Mr. G. Lambert, on January 16, asked the Secretary to the Admiralty whether he was aware that a convoy of about twenty ships left Falmouth on December 26, that within 14 miles of that port two new ships of 11,000 tons and of 10,000 tons, respectively, were torpedoed; and that one sank within thirteen minutes, and the other was left in charge of an armed trawler, disabled, within 14 miles of Falmouth from 5 p.m. on the 26th to 4 a.m. on the 27th December, a period of thirteen hours, on a moonlight night; whether he was aware that the hostile submarine, having followed and further damaged the convoy, then returned and completed the destruction of the 10,000-ton ship at 4 a.m. on the 27th December; and what action the Admiralty had taken to show their appreciation of the perspicacity of those responsible.

Dr. Macnamara: It is true that two ships were torpedoed in this particular convoy, but the circumstances are somewhat different from those stated in the question. One of these ships was sunk; the other severely damaged. A destroyer and two armed trawlers were left to guard the ship that remained afloat, and on information of the attack reaching the base, two tugs and two trawlers were immediately dispatched to the assistance of the damaged ship. Unfortunately the tugs failed to find the vessel, and the report of an inquiry held to ascertain the reason for this has not yet reached the Admiralty. The gross tonnage of the vessels sunk was actually about half that stated in the question. One vessel was new, and the other one was built in 1907. The Admiralty have no information to lead them to believe that the submarine inflicted any further damage on this convoy. The circumstances connected with this attack are receiving full consideration.

Mr. Lambert: Will the right hon. Gentleman kindly tell us why it was that the new ship was left for thirteen hours, 14 miles from Falmouth, on a moonlight night?

Dr. Macnamara: I have said that an inquiry is being held into that, but it was not the fact that the vessel was absolutely left, because I have spoken of two trawlers remaining behind, and two tugs and two trawlers were despatched.

Mr. Houston: Is the right hon. Gentleman aware that many experienced British shipowners would very much prefer to be without the protection afforded by the Admiralty?

Dr. Macnamara: That is a matter of very, very high policy.

Submarine Operations.

Sir Richard Cooper asked the Secretary to the Admiralty, on January 21, whether he could say why enemy submarines could operate in the Mersey, whilst British submarines were unable to operate close to the enemy ports in the North Sea.

Dr. Macnamara: The Admiralty are not prepared to admit that British submarines are unable to operate close to enemy ports in the North Sea, but it must be clear to my hon. friend that the conditions prevailing on the coasts of enemy ports are wholly different from those which exist at the mouth of British ports. The absence of any channels in the case of British ports tenders possible the use of restrictive measures by the enemy. On the other hand the existence of numerous channels along British ports renders it necessary that the approaches to it be kept clear of mines.

Encounter with a Submarine.

Mr. Byrn asked the Secretary to the Admiralty, on January 22, whether his attention had been called to the encounter between a steamship of the [illegible] Line and an enemy submarine in the Irish Sea on January 2 [illegible]; whether it was [illegible] claimed by the [illegible] that the submarine had been [illegible] and that [illegible] proposed to [illegible].

Dr. Macnamara: Reports have been received of the encounter [illegible] January 2. The [illegible] Parish was [illegible] and [illegible] into the [illegible].

Discharge of Food Cargoes.

Sir J. D. Rees asked the Parliamentary Secretary to the Shipping Controller, on January 16, whether every ship arriving at a British port now brought such food as it could whatever might be its chief cargo; and whether every such ship could discharge its food cargo at the first port of call in the United Kingdom.

Sir L. C. Money: All ships controlled by the Ministry of Shipping are loaded under instructions carefully framed with the object of maintaining supplies of food and other commodities essential to the War. Every effort is made to ensure that ships are discharged, coaled and loaded at one and the same port, and that these operations are carried out at the first port of call. The extent to which this policy can be carried out in practice is, however, limited in the last resort by the facilities for the distribution of supplies overland.

Supply of Admiralty Charts.

Mr. Haslam, on January 16, asked the Secretary to the Admiralty whether he was aware that advertisements were appearing in the Press stating that the latest editions of charts, plans, and sailing directions might be obtained by writing to Admiralty agents by appointment; and, if so, whether he would consider the desirability of preventing the issue of such advertisements at the present time.

Dr. Macnamara: The Admiralty charts and sailing directions are used by all mariners, and it is desirable in the interests of safe navigation that the latest editions should be used. There is, therefore, no objection to the advertisement of the same. Information which it is desirable should not be published is, of course, omitted from the published charts and communicated to His Majesty's ships only. Steps are also taken to secure, as far as possible, the supply of charts to foreigners for legitimate purposes of navigation only, all exports of the same being carefully reviewed.

Norwegian Contracts in the United States.

Mr. Houston asked the Parliamentary Secretary to the Ministry of Shipping, on January 16, how many ships, contracted for or building in America for or on account of Norwegian or other neutral owners, were purchased by British subjects and/or the British Government; how many ships contracted for or building in America were on account of British subjects or the British Government; and the total number of all these ships that had been requisitioned by the American Government.

Sir L. C. Money: Twenty-nine Norwegian contracts in respect of ships building in the United States have been taken over by His Majesty's Government. So far as the Shipping Controller is aware, there have been no purchases on private account by British subjects of ships contracted for or building in the United States on account of Norwegian or other neutral owners, since the establishment of the Ministry of Shipping. Precise information is not available as to how many ships had been contracted for or were being built in the United States for private account of British subjects, but 169 steel vessels, including the Norwegian contracts above referred to, and two wooden vessels had been contracted for by His Majesty's Government. The American Government have requisitioned 158 of the above-mentioned steel vessels.

Mr. Houston: Is the hon. Gentleman aware that his information is substantially accurate?

[illegible]

Labour Needs of the Shipyards.

Mr. G. Lambert asked the Secretary to the Admiralty, on January 16 whether he could state what estimate or [illegible] had been asked [illegible] could be made [illegible] employed in the private shipyards [illegible] for building merchant tonnage; and what steps were being taken to supply the private yards with as much labour as could be economically utilised.

Dr. Macnamara: The [illegible] workmen that could be profitably employed on private shipyards at the present time is approximately 17,000, but this [illegible] concentrated [illegible] during the year. It is [illegible] that [illegible] at work in the private shipyards [illegible] workmen are being drafted into the shipyards from [illegible] and the appeal for labour to [illegible] the [illegible] meeting regularly [illegible] to work. I would [illegible] the establishment of [illegible] to [illegible] the [illegible] labour [illegible].

Mr. P. A. Harris: How can [illegible] provide men for the new [illegible] when you cannot [illegible] the present time meet the demands of the private shipyards on the West Coast?

Dr. Macnamara: We have a large number of men at work by substitution and replacement, and, with additions, we hope to provide all that are necessary for output.

Mr. Harris: Are the men employed at Government shipyards on the West Coast being obtained at the expense of private shipyards?

Dr. Macnamara: I have stated frequently that we are taking no men from our own Royal dockyards or private shipyards.

Mr. Houston: Is the right hon. Gentleman aware that the British shipbuilders are clamouring for labour, in spite of what is being done?

Dr. Macnamara: No doubt that is true, but we are not taking men from the private shipyards.

Shipyard Labour in Dumbarton.

Mr. Ramsay Macdonald, on January 21, asked the Minister of Munitions whether he had been informed that the shipyard employees in Dumbarton received from their employers a promise on December 20 last that an increased 12 per cent. would be paid on the 22nd at the Ministry of Munitions agreed, and that the firm was in communication with the Ministry on the subject; that the Ministry sent, under date of December 11, a letter which arrived on the 21st and which was too late to permit of an amicable settlement of the time; whether he was aware that, by delays and continued unsettlement owing to the indefinite replies made by the Ministry of Munitions, serious number of men quarried work, and whether he could yet have, when, secure the dispute.

Dr. Macnamara (who replied) said: It was true that the employees received a promise from the employers on December 20 that the 12½ per cent. bonus to place time workers would be paid on the 22nd if the Ministry of Munitions agreed, and the terms concerned were in communication with the Ministry on the subject. The Order is dated December 11, and a very large number of copies had to be issued. Failing from the printers that the prints could not be returned to me by the 18th, we set to work ourselves on the 17th, duplicating some of the Order, and a covering letter which was posted by us on the 18th. These were not delivered by the Post Office to some of the Dumbarton firms till the 21st. On the 20th some of the employers on the Clyde informed their men that unless the Order was received that day it would be impossible to pay the bonus to all men entitled to it on the 22nd, and a notice to this effect appeared in the local press. The copies arrived too late to enable the employers to make up the pay sheets so as to pay on the 22nd, and the bonus was paid the following week before the new year holidays. It is possible that this incident contributed in some degree to the decision of the men to down tools, but my hon. friend is, of course, aware that other questions were involved. The whole question of the strike has been in the hands of the Ministry of Labour. I understand that most of the men affected in the particular case undertook to return to work this morning.

Mr. Shaw: Are we to understand that this advance will be fully retrospective to December 22?

Dr. Macnamara: I should like to see the terms, but I do not doubt that is the case.

PORT NOTES.

Port Harcourt.—This port has been opened in Nigeria since the war began. It is 20 miles from the Atlantic seaboard, up a creek, which has ample depth of water for large ships. Important discoveries of coal have been made in the vicinity, and tips for the loading of steamers are now being erected.

Abo (Finland).—It is proposed to establish a large electric power station, through which it is hoped to supply a large proportion of the export trade from Abo and Western Siberia. The new port would be likely to play an important part in the export trade between Central Europe and Russia after the war.

Gothenburg Harbour.—The Harbour Board proposes to build three new harbours at Indalsverken, on the Gota Elf, to relieve the congestion in the Harbour of Gothenburg. The total area of the harbours will be 1,076,400 square feet, and the length of quays 4,600 feet. The estimated cost of the harbours is £90,000, and it is proposed to borrow the money. The work, it is expected, will be completed in two years. The Harbour Board has also decided to lay before the Municipal Council of Gothenburg a request for permission to construct three new harbours at Gothenburg, and to borrow £800,000 for the purpose. The approximate cost of these three harbours will be £1,000 per metre, and the estimated cost of the work is put at £4,000,000.

NEWS PARAGRAPHS.

Amsterdam Ship-Union Bank.—This institute is raising its share capital from £83,333 to £166,666.

Dutch War Insurance.—The stipulation that the risk for one vessel may not exceed £166,666 is now removed.

Bayerische Lloyd Schiffahrtsgesell., Regensburg.—This firm has acquired the Hitzler Yard in Deggendorf. No further particulars are yet available.

Vrachtvaart My. Nederland.—The capital of this concern is to be increased by £83,333. A number of motor auxiliary vessels are being built for the company.

Hollandsche Stoomboot Mij.—This company has increased its capital from £187,500 to £270,833 by the issue of new shares at 200 (the old shares stood at 250).

Frachtvaart Maatschappij.—This company has been established in Holland with a share capital of £333,333 (issued at 106 per cent.) to operate 16 small cargo vessels.

Kallundborg Shipyard Company.—This company, which was founded at the beginning of the year with a share capital of £55,000, proposes to increase the latter to £110,000.

Ungarische Fluss u. Seeschiffahrts Gesell.—The Hungarian Government proposes to acquire a large interest in this company, which is accordingly increasing its capital from £1,040,000 to £1,250,000.

Coaling in Panama Canal Zone.—The Consul-General for the United States in London notifies that he has received a telegram from the Department of State at Washington stating that the Governor of Panama Canal has been authorised to permit all vessels of allied nations proceeding to allied countries to coal at ports in the Canal zone.

Mersey Cattle-Wharf Charges.—Mersey Docks and Harbour Board have decided that the charges paid by coasting steamship owners to the Board in landing Irish live stock from steamers berthed at the Mersey Cattle Wharf shall be increased for the duration of the war by a further 10 per cent., making a total increase of 20 per cent.

German Preparations for Peace.—According to *Hamburger Nachrichten*, "large German owners have recently distributed important orders for new constructions amongst German yards. Up to the present, the orders amount to more than 150,000 tons." If this be the whole truth, it is not particularly exciting, especially as some at least of the orders will probably not come into operation until peace is declared.

Transhipment Charges.—The Board of Trade have received a copy of the following Regulation made by the Governor of South Australia on September 27 last, under the provisions of the Harbours Act, 1913: "A transhipment charge shall be chargeable and paid on all goods transhipped direct overside from one vessel to another within the limits of a harbour. Such charge shall be at the rate of one-half of the wharfage charge for the time being in force at such harbour."

Delays at Durban.—It is understood that the Admiralty is making a special enquiry into the cause of delay in transports at Durban, which, it is estimated, costs from £400 to £1,000 a day. As regards coaling, a special arrangement, with a view to the expeditious despatch of dispatch-boats, was made. Coal of the same grade of quality will be supplied as far as possible, and to arrange to the least possible minimum the detention of trucks and, what is of more importance, trimmers.

Other Ice Steamship Company's Shares.—Shareholders of the Mercantile Steamship Company, of London, which owns a fleet of ice-steamers, have been informed by the Directors to accept an offer to purchase the property and assets of the company. The purchase price is £60 per share, but if more than 75 per cent. of the shareholders agree to sell, the price will be £61 per share. It would be sought at par. The capital consists of 20,000 ordinary shares and 128,000 preference shares. The offer is conditional on 75 per cent. of the shareholders accepting, and if accepted, would involve the payment of £1,600,000. The offer is subject to its acceptance by the request of a majority of the holders.

International Mercantile Marine Company.—The greater part of the holdings of the company are dollars. The last balance sheet showed the nominal value of shipping investments to be about £9,262,900, and of that only 6½ per cent. was American.

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF SHIP SALES.

ame and Type.	Tonnage.	Dimensions. Draught in ( ).	Sold by, to	Builders, hull and year.	Machinery and builders.	Remarks.
Americano, ss. (shade dk.) (ex *Flora*)	1,715 gr. 1,143 net	250½′ × 38¼′ × 15½′ (16′ 4)	Soc. Importadora y Exportadora de la Pategonia, to Dodero Bros., Buenos Ayres	Wood, Skinner & Co., Newcastle (1908)	19, 31, 51 × 36 (G. Clark, Ltd., Sunderland)	Price about £150,000.
Barton, ss. (Trunk dk.)	3,751 gr. 2,408 net 5,865 d.w.	330′ × 47′ × 25¼′ (23′ 5″)	Webster & Barraclough, Ltd., W. Hartlepool, to the Britain S.S. Co., London	Ropner & Son, Stockton (1899)	24, 40½, 65½ × 42 (Blair & Co., Stockton)	—
Coniston, ss. ..	3,544 gr. 2,273 net 5,562 d.w.	337′ × 47′ × 24½′ (22′ 1″)	Pyman S.S. Co., W. Hartlepool, to the Sheaf S.S. Co., Newcastle	Wm. Gray & Co. (1901) ..	25½, 40½, 67 × 45 (Cen. Mar. Eng. Wks.)	—
Kaijo Maru, ss. (ex *Curonia*, ex *St. Domingo*, ex *Doune Castle*)	4,107 gr. 2,563 net 5,100 d.w.	396′ × 43½′ × 28½′ (27′ 3″)	Goshi Kaisha Kishimoto Shokai Dairen, to buyers not stated	Barclay, Curle & Co., Ltd., Glasgow (1890)	29½, 48, 78 × 54 (Barclay, Curle & Co.)	Price about £140,000. Sold in January, 1916, for about £65,000.
Koolonga, ss. (single dk.)	4,260 gr. 2,623 net	364′ × 50½′ × 26′ (23½′)	McIlwraith, McEacharn & Co., Proprietary, Ltd., Melbourne, to W. Scott Fell & Co., Sydney	Sunderland S.B. Co., Sunderland (1914)	25, 42, 68 × 45 (N.E. Mar. Eng. Co., Sunderland)	—
Landport, ss. (single dk.) (ex *Irish Coast*, ex *Rosslyn*)	603 gr. 243 net 730 d.w.	180½′ × 27′ × 10½′ (13′ 3″)	Associated Portland Cement Mfrs. (1900), Ltd., London, to Mr. A. Chester, Middlesbrough	Murdoch & Murray, Pt. Glasgow (1904)	20½, 44 × 30 (Muir & Houston, Glasgow)	—
Leonora, ss. ..	2,743 gr. 1,733 net	345′ × 37½′ × 25½′	Linea de Vapores Serra, Barcelona, to Mr. Domingo Mumbru, Barcelona	London & Glasgow Eng. & Iron S.B. Co., Glasgow (1881)	38, 71 × 48 (London & Glasgow Eng. & Iron S.B. Co.)	
Mashona, s.v...	2,592 gr. 2,463 net 3,900 d.w.	304′ × 43′ × 24′	C. Towne & Co., Monte Video, to buyers not stated	Mr. C. J. Bigger, Londonderry (1891)	—	Price about £65,000.
Montana, ss. ..	7,020 gr. 4,420 net	425′ × 57′ × 33½′	W. Wilhelmsen, Tonsberg, to buyers not stated	Sir J. Laing & Sons, Sunderland (1917)	27, 45, 74 × 54 (G. Clark, Ltd., Sunderland)	—
Niels, ss. (ex *Cabo Corrientes*, ex *West Coast*, ex *River Tay*)	467 gr. 195 net	165½′ × 25½′ × 10½′	Dampskibs. "Excelsior," Copenhagen, to Mr. Thomas Just, Copenhagen	Ardrossan D.D. & S.B. Co., Ardrossan (1902)	16, 40 × 20 (Hutson & Son, Glasgow)	—
Northford, ss. (single dk.) (ex *Beacon Rock*)	495 gr. 194 net 660 d.w.	170′ × 25½′ × 11½′ (13′)	Northford & Co., Ltd., Liverpool, to Donald Macleod & Co., London	Ailsa S.B. Co., Troon (1895)	19, 42½ × 30 (Muir & Houston, Glasgow)	Price about £23,000.
Saracen, ss. (single dk.) (re-named **Fastness**)	3,272 gr. 2,055 net 5,600 d.w.	340′ × 48½′ × 23½′ (21′ 4″)	Ottoman Line, Ltd., Newport, to the Letricheux Line, Swansea	J. Priestman & Co., Sunderland (1911)	24, 40, 65 × 42 (G. Clark, Ltd., Sunderland)	Price about £100,000.
Sydney, ss. (single dk.)	1,989 gr. 1,183 net	280½′ × 38½′ × 19½′ (19′ 5″)	Melbourne S.S. Co., Melbourne, to W. Scott Fell & Co., Sydney	Caledon S.B. & E. Co., Dundee (1902)	22, 35, 59 × 36 (Caledon S.B. & E. Co.)	—

6 per cent. Belgian and 3¼ per cent. Dutch. The last was represented by the Holland-America Line, of whose stock the International owned 25 per cent., or £312,500, through a joint possession by the Oceanic Steam Navigation Company (White Star Line) and the Atlantic Transport Company. It is now announced that the International has disposed of half that holding to Dutch interests for £700,000, equal to a premium of about 150 per cent. on the par value of the stock. The deal was for cash, and the International proposed to devote the proceeds to the purchase of new vessels.

Gold Medal for British Shipowners.—Instone & Co. (Italy), the Italian branch of S. Instone & Co., Ltd., of Cardiff and London, have been awarded a gold medal by the Italian Red Cross Society, for services rendered.

Vigorous Shipbuilding in Canada.—Under the Union Government, Canada is entering upon a vigorous policy for the construction of ships. The Hon. C. G. Ballantyne, Minister of Marine and Fisheries, announces that the Government has decided to utilise the existing shipyards to their utmost capacity in the production of modern cargo steamers. It is estimated that the yards can turn out from 250,000 to 300,000 tons annually. The Government is negotiating for the erection in Canada of mills for rolling steel plates and shapes to provide the maximum requirements. The construction of three types of ship is under consideration. One type comprises vessels of approximately 3,000 tons; another, vessels of from 5,000 to 7,000 tons; and the third, vessels of from 8,000 to 10,000 tons. During the continuance of the war the construction of steel ships in Canadian yards for foreign registry will not be permitted.

FORTHCOMING EVENTS.

NORTH EAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS.—Friday, January 25, meeting in Lecture Theatre of the Literary and Philosophical Society, Westgate Road, Newcastle-on-Tyne, at 6 p.m. The Right Hon. C. Addison, P.C., M.P., Minister of Reconstruction, on "Trade and Industrial Reconstruction." Admission by ticket only.

LONDON CHAMBER OF COMMERCE.—Wednesday, January 30, meeting in the Pillar Hall, Cannon Street Hotel, London, E.C. Address by Mr. Alfred Bigland, M.P., on "The Aims and Objects of the Empire Resources Development Committee."

INSTITUTION OF NAVAL ARCHITECTS.—The annual meetings will take place on Wednesday, March 20, and the following day, in the Hall of the Royal Society of Arts, John Street, Adelphi, London, W.C. (by kind permission of their Council). The Right Hon. the Earl of Durham, K.G., G.C.V.O., P.C., President, will occupy the chair. A gold medal will be awarded by the Council to any person, not being a Member or Associate Member of Council, who shall at the forthcoming meetings read a paper which, in the judgment of the Council, is deemed to be of exceptional merit. The Council will also offer a premium of books or instruments to the reader of any paper, not being a Member or Associate Member of Council, which, in the judgment of the Council, merits this distinction.

SHIPPING AND OTHER MEETINGS.

Jan. 29. (*Tues.*)—SEA INSURANCE COMPANY (Ordinary General), at Exchange Buildings, Liverpool, at 12.30 p.m.

Jan. 31. (*Thurs.*)—BATHAMPTON STEAM NAVIGATION COMPANY, Ltd., (Annual), at Cardiff, at 10.30 a.m.

SHIPPING SHARE MARKET.

Despite a slight reaction in the shipping stock and share markets at the end of last week, prices show a further all-round improvement on the balance of the past seven days' business. The announcement that the present system of licensing voyages, which applies only to steamships over 500 tons gross, will be extended as from February 1, so as to apply to all ships of whatever size, and that schedules of maximum freights for particular trades and voyages will be established, has not caused any diminution of the confidence which investors are exhibiting in shipping shares. There was an outburst of buying of Mercantile Steamship shares on Friday (over 30 bargains being marked) on the circulation of the statement that the shareholders had received an offer for the purchase of their shares on the basis of £32 for the £5 ordinary. It is understood that the offer is made through the directors by Lord Inchcape, acting on behalf of the Peninsular and Oriental and British India companies. This purchase affects a much larger circle of investors than would have been the case a few years ago. Twenty years ago the Mercantile only had 165 shareholders, ten years ago 250, and to-day the register covers quite 400 names. The deadweight tonnage owned by the Mercantile Company is 86,320. For the year 1916 40 per cent. was paid to the ordinary shareholders in dividend and bonus, and this gives holders a yield on the basis of a valuation of 32 of £6 5s. It is probable, therefore, that the offer will be accepted. Peninsular and Oriental deferred stock has not moved on the proposed operation. Cunard shares continue to be dealt in at 86s., and there have been a large number of bargains marked in Furness Withy shares at over £3. Dealings in Sutherland Steamship shares have been active with the price rising to 89s.6d., as compared with 80s. a week ago, and 75s. at the beginning of the month. Newcastle reports dealings in the same shares at 90s. In the list of unofficially quoted shares there have been brisk dealings in Court Line shares, but it is noticeable again that all demand for Prince Line shares has subsided. Shipbuilding and kindred shares keep very firm with a demand for stock directly it comes on the market at a reasonable price. Cargo Fleets have had a sharp rise.

SHIPPING, SHIPBUILDING, ENGINEERING AND MARINE INSURANCE SHARE LIST.

SHIPPING.

Name.	Share and paid.	Extreme quotations, 1917.	Last ann. div. % or per share.	Yield. %	Last Quotation	Rise or Fall.
	£					
African S.S.	20	30½–25½	10	7½	28	
Allan Line ... ... Deb.	100		4	4½	92	
Anchor Line ... Cum. pref.	10	9½–8¾	5½	5½	9½	
Do. ... ... Deb.	Stk.	105½–104½	4½	4½	103	
Argentine Nav. ... Cum. pref.	1	25/—14/3	Nil.	Nil.	23/-	– 3/3
Do. ... ... Ord.	1	20/6–6/6	Nil.	Nil.	17/1½	+ 4/4½
Australasian Un. S. Nav. Deb.	Stk.	80½–79½	4	5	81xd	
Belfast Steam ... ... "A"	10 (5pd.)	—	5	5	5	
British & Argen. Nav. ... Deb.	Stk.	84–80	4½	5½	81	
British India Nav. ... Deb.	Stk.	84–82	4½	5½	81	
British S.S. Invest. Trust Def.	Stk.	460–344½	50*	11½	430xd	
Do. ... ... Pref.	Stk.	105½–104	6	5½	102xd	
Do. ... ... Deb.	Stk.	74½–70	4½	6 5/16	72xd	
Cairn Line ... ... Deb.	Bds.	94–90	5	5½	90½–91	
Do. ... ... Ord.	1	51/6—40/9	20†	8	48/3	
Clan Line ... ... Ord.	10	55½–26½	25	5½	46¾	– 1¼
Court Line ... ... Ord.	£1	40/6–29/6	20	10	39/3	
Cunard SS. ... ... Ord.	1	85/—63/9	20*	5	84/9	(–2/9
Do. ... Cum. pref.	Stk.	97½–82	5	5½	86¾	(+1¾
Do. ... ... Deb.	Stk.	100–93½	4½	4½	97½	– ½
Elder Line ... ... Deb.	Stk.	95–89	4½	4½	103	
Elder Dempster ... Cum. pref.	1	19/—17/–	5½	6½	17/6xd	
Do. ... ... Deb.	Stk.	89–85	5	5½	85xd	
Ellerman Lines ... Pref. Ord.	10	9½–8½	6½	6½	9½xd	
Do. ... Guar. pref.	10	9–8½	4½	5½	8½	
France Fenwick ... Cum. pref.	5	95/3—85/–	5½	6½	87/6	
Furness, Withy ... Ord.	1	60/9—41/6	20*	6½	60/3	– 1/6
Do. ... Cum. pref.	10	9–7½	5	5½	8¾	
General Steam Nav. ... Ord.	1	24/9—21/6	10	7½	23/6	
Do. ... ... Pref.	1	19/4½—15/–	5	6½	16/–	
Houlder Line ... Cum. pref.	5	82/6–75/–	5½	6½	77/6xd	
Do. ... ... Deb.	Stk.	—	4½	4½	91xd	
Houlder Bros. ... Cum. pref.	5	—	5½	6¾	4	
Do. ... ... Deb.	Stk.	—	4½	5½	82	
India Gen. Nav. & Rly. ... Ord.	10	11¾–8½	6	5½	11	
Indo-China N. ... Pref. Ord.	5	9⅞/6–87/6	6	6¾	97/6	
Irrawaddy Flotilla	40	—	15	5	120	
Khedivial Mail ... ... Ord.	1	40/—24/–	20	12½	36/6	
Do. ... ... Pref.	5	7⅝/3–7⅜/–	5½	7½	7 3/9	
Do. ... ... Deb.	Stk.	95¾–93	4½	4¾	95xd	
King Line ... ... Ord.	1	42/6–31/6	16*	9¾	43/–	
Lamport & Holt ... Cum. pref.	£1	20/4½–18/–	6	6	19/4½	+ 7/6
Leyland (F.) ... Cum. pref.	10	8¾–7½	5	5½	8¾	– ⅛
Mercantile SS. ... ... Ord.	5	30/5–15	40	8	30½	+1
Do. ... ... Pref.	1	21/—15/9	5	6¾	21–	+ 3/3
Moor Line ... ... Ord.	10	35–20	30	13½	35	
Nelson Steam Nav. ... Deb.	100	—	5	5⅛	98¾	
New Zealand ... ... Ord.	£10	—	8	2½	32½	
Do. ... ... Deb.	Stk.	87½–86¾	4	4½	88½	
Nitrate Producers SS. ... Ord.	5	25½–20	30	6¼	24½	
Do. ... Cum. pref.	5	100/—90/–	5	5	5	
Oceanic Steam. Nav. ... Deb.	100	98¾–84	4½	4⅝	94xd	
Orient. Stm. Nav. Co. Cum. pref.	10	9½–8⅜	5	5½	8½	
Do. ... ... Deb.	100	92–88	4½	5⅛	88	
P. & O. S. N. ... Cum. pref.	100	93¾–84	5	5⅜	91	– 2
Do. ... ... Def.	100	342–295	18	5⅜	339	
Do. ... ... Deb.	Stk.	65¾–63½	3½	5½	63	
Prince Line	1	6⅜–3/–	30	5½	113/–	
R.M.S.P. ... ... Ord.	100	125–109½	7	6	124½	– 1½
Do. ... ... Pref.	Stk.	85⅛–80	5	6	85	
Do. ... ... Deb.	Stk.	86–79	4½	5⅜	78xd	
Shaw, Savill & Alb. Cum. pref.	5	87/6–80/–	5½	5½	85/–	
Shell Transport ... ... Ord.	1	6½–96/3	35	6½	9⅜	
Do. ... Cum. pref.	10	9⅜–9⅛	5	5⅜	9⅜	
Sutherland SS. Co.	£1	75/—80/9	30	8	80/3	
Union-Castle SS. Co. Cum. pref.	10	7⅞–7½	4½	6	7¾xd	
Do. ... ... Deb.	Stk.	90–89	4	4½	90	+4
West Hartlepool ... ... Pref.	10	7¾–7½	5½	6⅝	7¾xd	

INSURANCE.

Alliance	20 (2/4 pd.)	10½–9	12/–	7	9⅜	+ 3/16
London Assurance	25 (12½ pd.)	60⅜–48⅜	20	6	60	
Merchants' Marine Insurance ...	10 (2½ pd.)	10⅜–6¼	10	6	10½	+1¼
N. British & Mercantile Ord.	25 (6¼ pd.)	36–29	40/–	9⅜	34½	
Phœnix Assurance	10 (1 pd.)	7⅞–6	40	7	8	+ ⅛
Royal Exchange Assurance ...	Stk.	241½–187	10	4½	247½	+3½
Sea Insurance	10 (2 pd.)	27½–24¼	10	6	27	
World Marine, Limited ...	5 (2 pd.)	6¾–5⅜/–	5	4¾	6	

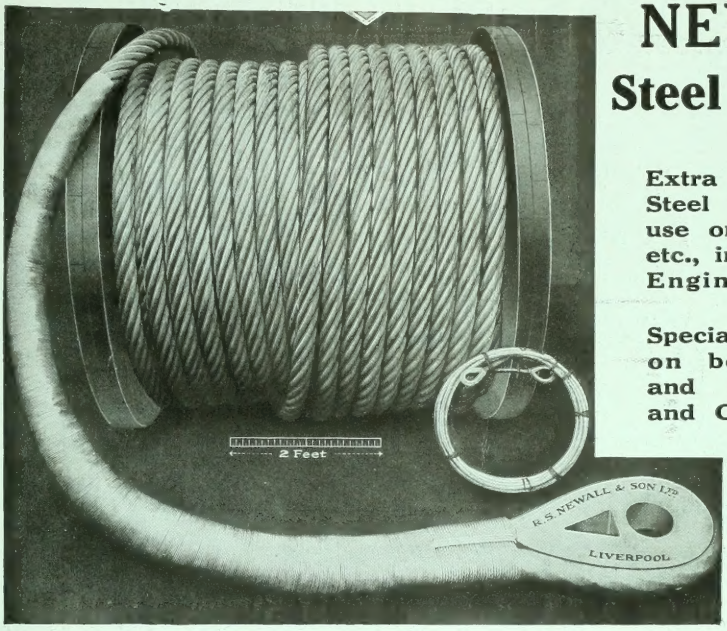
IRON AND STEEL.

Name.	Share and paid.	Extreme quotations, 1917.	Last ann. div. % or per share.	Yield. %	Last Quotation	Rise or Fall.
	£					
Babcock & Wilcox... ... Ord.	1	68/—52/6	15	4⅜	65/6	+1/–
Baldwins ... ... Cum. pref.	1	20/—15/–	5½	5⅜	20/–	
Do. ... ... Deb.	Stk.	84–82	4½	5⅜	84xd	
Bayliss, Jones ... Cum. pref.	1	—	5	7½	1 1/16	
Bell Bros. ... ... Cum. pref.	10	10–9½	6	6	10	
Do. ... ... Deb.	Stk.	80–73½	5	6¾	73½xd	
Bessemer (Henry) ... Ord.	1	34/6–24/6	12½	7½	33/6	
Bolckow Vaughan ... Ord.	1	30/—22/2	11	7½	28/–	
Cargo Fleet Iron ... ... Ord.	20	17½–16½	5	5½	17	
Do. ... ... Deb.	100	84–81½	4½	5½	82xd	
Consett Iron Co. ... ... Ord.	1	36/3-24/10½	50	11	90/–	
Dominion Iron & Steel	Bds.	88⅜–71½	5	7	71	
Dorman, Long ... ... Ord.	1	50/—30/9	8†	—	39/3	–6/–
Do. ... ... Deb.	Stk.	—	4	5½	71xd	
Ebbw Vale Steel & Iron Ord.	1	30/6—24/6	12½	9	28/3	– –/6
Guest, Keen & Nettefids Ord.	1	89/—62/6	15*	3⅜	85/6	+3/–
Do. ... ... Cum. pref.	5	5⅝–5	5	4½	5⅛	
Do. ... ... Deb.	Stk.	79½–73¾	4	5½	78xd	
Hadfield's Steel Foundry Ord.	1	107/6–78/6	30	5½	106/6	+1/6
Ibbotson Bros.	5 (4 pd.)	7–6½	7½	4½	6½	
Jessop (W.) & Sons ... Ord.	5 (4 pd.)	10–8	15*	6	10½	
Lanarkshire Steel ... Cum. pref.	10	—	5	7½	7	
Lysaght (J.) ... Cum. pref.	1	25/—20/–	6	6	20/–	
Do. ... ... 2nd pref.	1	19/9–19/4½	6	6	20/–	
Manganese Bronze ... Ord.	1	—	6	11	1/16	
Do. ... ... Cum. pref.	1	—	6	8	⅛	
North-Eastern Steel ... Deb.	Stk.	—	4½	—	—	
Palmers Ship & Iron "A" ...	1	13/—9/9	Nil.	Nil.	13/6	
Scott (Walter) ... ... Ord.	1	29/4½–21/3	15	10⅜	29/–	
Do. ... ... Pref.	1	19/9—16/–	6	7½	19/9	+ –/9
Sheffield Forge ... ... Ord.	1	—	15	4½	66/–	
Shelton Iron & Steel ... Ord.	1	24/6-16/10½	7½	6	23/4½	+ –/1½
Do. ... ... Deb.	100	91½–91	5	5½	91½xd	
S. Durham Steel & Iron Ord.	1	42/8—28/6	10	4½	41/3	+1/6
Do. ... ... Cum. pref.	1	20/9–18/7½	6	6⅜	20/–xd	
Do. ... ... Deb.	Stk.	81–80	4½	5⅜	78xd	
Steel Co. of Scotland ... Ord.	10	—	10	10	12/1/–	
Stewarts & Lloyds Pref. ord.	10	17—16	10	6½	16	
Do. ... ... Cum. pref.	10	—	6	4½	13½	
Stone (J.) ... ... Cum. pref.	10	8⅜–7¾	5	6½	7 1/xd	
United States Steel ... Ord.	100$	124—109⅜	5	7½	109⅝	
Do. ... ... Cum. pref.	100$	—	7	6	114½	
Vickers Ltd. ... ... Ord.	1	44/6—35/3	12½	5½	42/9	
Do. ... ... Pref.	Stk.	84—81	5	6	82	
Do. ... ... Deb.	Stk.	79–74⅜	4	5 3/8	77½	
Weardale Steel ... Def. ord.	1	32/3–23/–	19½	13½	27/–	
Do. ... Cum. pref.	1	25/3–18/9	6	5½	23/–	
Do. ... ... Deb.	Stk.	—	4½	6½	62	
Workington Iron & Steel Ord.	1	33/3—21/–	10	6¾	29/–	– –/4½

SHIPBUILDING AND MARINE ENGINEERING.

Armstrong, Whitworth Ord.	1	45/—36/–	12½	5⅝	42/–	– –/3
Do. ... ... Cum. pref.	5	7⅜/9–6⅞/–	5	5½	6 7/6	
Do. ... ... Deb.	Stk.	78–73	5	6⅝	76xd	
Beardmore (W.) ... ... Deb.	100	93–89	4½	5	89½	– ½
Brown (John) ... ... Ord.	1 (15s. pd.)	22–/—22/9	12½	7½	20/3	– –/6
Do. ... ... Cum. pref.	10	8¾–7⅝	5	5¾	8⅜	
Cammell Laird ... ... Ord.	5	7¼–6¾	10	7½	7	
Do. ... ... Cum. pref.	5	85/6—74/6	5	6¾	82/6	
Do. ... ... Deb.	100	83½–79¾	4½	5⅜	80	
Dunlop (Jas.) ... ... Ord.	1	28/9—16/–	10	9½	22/9	
Do. ... ... Cum. pref.	1	18/9—16/6	6	7½	17/6xd	
Fairfield Shipbldg ... Cum. pref.	10	8⅜–8⅛	6	7⅜	8⅜	
Fleming & Ferguson ... Ord.	10	—	10	7	14½	
Gray (Wm.) ... ... Ord.	100	100–95⅜	4½	4½	100½xd	
Hawthorn (R. & W.) Leslie Ord.	10	25½–15¾	12½	5	25⅜	
Henderson (D. & W.) Cum. pref.	1	—	5	9	⅝	
Richardsons Westgarth Ord.	1	10/3–5/–	Nil.	Nil.	8/8¼	+ –/8¼
Do. ... ... Cum. pref	1	19/9—12/6	Nil.	Nil.	17/–	
Do. ... ... Deb.	Stk.	67–62	4½	6¾	66xd	
Simons (W.) ... Cum. pref.	10	—	5	5	9½	
Swan, Hunter & W. R. ... Ord.	1	51—33/6	12½	5⅜	50/–	
Do. ... ... Cum. pref.	1	17/8–17/–	5	5½	17/–	
Do. ... ... Deb.	Stk.	78–77	4½	5⅜	77xd	
Thornycroft (John I.) ... Ord.	1	45/—16/–	17½	8¼	40/–	+ –/6
Do. ... ... Cum. pref	1	19/—16/–	6	6½	19/–	
Do. ... ... Deb.	100	—	5	5⅜	80xd	
Wallsend Slipway ... ... Ord.	1	2—1⅜	10	5	2	
Do. ... ... Cum. pref.	1	1—1	5	5	1	

* Including bonus. † Also 20 % in shares. ‡ Treasury price.



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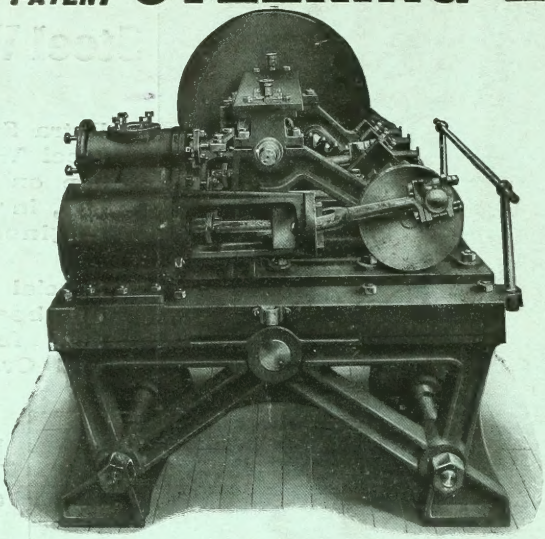

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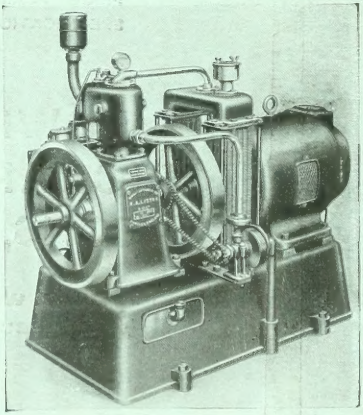

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